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THE PLANT DISEASE REPORTER

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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SEED TREATMENT OF LARGE LIMA BEANS IN CALIFORNIA

L. D. Leach and A. H. Holland

Following 3 years of greenhouse and field experimentation the treatment of large-lima beans has been accepted as a standard practice by the growers of this crop in the southern coastal counties of California. During 1943 over 13,000 acres were planted with treated seed, and the results both in growers' fields and in experimental trials were so satisfactory that a much larger acreage will be planted with treated seed in 1944.

Practically all of the dry large-lima beans in the United States, both commercial and seed crops, are produced in the southern coastal district of California. In 1942 a total of 1,355,000 100-pound bags was produced on 105,000 acres. Large-lima bean production is confined to a narrow strip of land 8 to 10 miles wide extending south from Point Conception to the Mexican Border through Santa Barbara, Ventura, Los Angeles, Orange, and San Diego Counties. 1/ The large limas grown in three counties constitute one-fourth of the dry beans produced in California and 7% of the total dry beans produced in the United States. The extreme localization of production is explained by Mackie 2/ as follows, "the large-lima group (for dry beans) is restricted to the coastal areas, where extremes of heat do not occur and where the air is more highly charged with moisture, usually in the form of fog, during the growing season."

The principal hazards in securing satisfactory stands have been seedling diseases, apparently caused principally by Rhizoctonia solani, and damage from wireworms. To overcome these difficulties the growers have increased their seeding rates from 40 pounds originally used to as high as 100 or 120 pounds per acre. The result has been excessively thick stands in some fields and optimum or thin stands in others. Trials were initiated in 1940 to determine if field stands could be improved by seed treatment. In preliminary trials we found, as have other workers, that lima beans were seriously injured by copper or mercury fungicides when planted under some conditions. Evidence of seed protection without injury was obtained, however, in trials with an organic-sulphur compound, DuBay 1286-CCC (manganese dimethyl dithiocarbamate). The writer was later informed that this material would not be manufactured commercially because "intermediates used in the preparation of this compound are required for national defense."

Following the introduction of Spergon (tetrachloro-para-benzoquinone) by the United States Rubber Company and a report 3/ of its adaptability to lima bean seed treatment, extensive trials covering a 3-year period were conducted with this material to determine its effectiveness as a seed protectant in soils infested by Pythium ultimum and Rhizoctonia solani. Details of these trials will be published elsewhere, but in summation it

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1/ Sullivan, Wallace, William M. Cory, and Milton D. Miller. Management practices with large lima beans in southern California. California Agr. Exp. Sta. Bull. 657. 1941.

2/ Mackie, W. W. Origin, dispersal, and variability of the lima bean, Phaseolus lunatus. Hilgardia 15:1-29. 1943.

3/ Cunningham, H. S., and E. G. Sharvelle. Organic seed protectants for lima beans. Phytopath. 30:4. 1940.

can be stated that a high degree of protection was afforded to the lima bean seeds as well as to young seedlings and that no evidence of injurious effects was observed.

After November, 1941, tests included seed treatments with 50% tetramethyl thiuram disulphide, recently introduced commercially as Arasan. In greenhouse tests this material at its optimum dosage compared favorably with Spergon and in some trials in Pythium-infected soils appeared to be superior.

Field trials were conducted in Ventura County in 1941, 1942, and 1943. During 1941 Spergon was applied at an excessive rate (1%) to large-lima beans planted in experimental strips in four growers' fields. Stands were improved in each case by 17 to 67% as compared with nontreated seed in adjacent rows. In one field different dosages of Spergon were compared with nontreated seed in replicated plots. A dosage of 0.1% of the seed weight did not improve the stand significantly, but dosages of 0.3% and 1.0% proved equally effective, nearly doubling the stand as compared with nontreated seed. DuBay 1286-CCC did not improve the stand in these trials.

During 1942 nearly ideal weather conditions prevailed during the planting season in Ventura County, and significant improvement in stand was obtained in only 1 of the 4 field trials. In this case Arasan and Spergon proved to be about equally effective at dosages of 0.2 and 0.4% of the seed weight.

In the spring of 1943 the Farm Advisor's office of Ventura County reported the results of the field trials of the previous 2 years and suggested that if growers planned to treat their seed, they should leave at least a few untreated rows. Comparisons were made in 11 commercial fields where seed treated with Spergon at 0.25% (4 oz. per 100 lbs. of seed) was planted adjacent to strips planted with nontreated seed. In some cases the plantings were replicated while in others they consisted of single strips of either treated or nontreated seed. The results in table 1 show that the stand was improved in 10 of the 11 fields and that in the field (No.2) showing no improvement excellent stands were obtained from both treated and nontreated seed. The average increase in stand was 37 plants per 100 feet of row. In 3 other fields the growers abandoned the nontreated portions and replanted with treated seed whereas the portions originally planted with seed treated with Spergon produced adequate stands. Dosage trials with Spergon and Arasan were conducted in 3 additional fields. It was found that an 0.1% dosage of either material was not effective. A dosage of 0.2% or 0.25% of Spergon appeared to be as effective as 0.4%. With Arasan, in 2 trials, a dosage of 0.4% appeared to be the most effective, while 0.2% was less effective than the same dosage of Spergon.

Independently, a seed company in Santa Barbara, California, specializing in production of beans for the seed trade, conducted seed-treatment trials with Spergon on large-lima beans in Santa Barbara and Ventura counties during 1941 and 1942. Their results were highly satisfactory, and as a result the company recommended to their contract growers that treated seed should be used on a large part of their acreage in 1943. The other seed companies contracting in this area also offered Spergon-treated large-lima bean seed to their growers in 1943.

The seed company mentioned above constructed a continuous-flow seed-treating machine especially designed to apply Spergon to lima beans and placed it near Oxnard, Ventura County, for custom work. All applications

Table 1. - Large lima bean seed treatment trials - Ventura County, California. 1943.

Field no.	Variety	Seeding rate lbs. per acre	Plants per 100 feet of row: Nontreated	Spergon, 0.25%
1	King of the Garden	50	128	144
2	Burpee Improved	100	175	170
3	Burpee Improved	80	85	129
4	King of the Garden	77	98	123
5	King of the Garden	80	85	127
6	Hospital	90	107	136
7	Ventura	100	157	209
8	King of the Garden	85	127	173
9	Ventura	100	82	151
10*	Ventura	100	65	96
11+	Ventura	97	92	144
Average		87	109	146

* Severe wireworm damage.
\+ Seed treated in planter box.

were at the rate of 0.25% or 4 oz. per 100 lbs. of seed.

During the 1943 planting season this machine treated 6200 100-pound bags of beans, estimated to have planted 4000 acres of commercial beans and 3700 acres contracted for seed production.

The demand exceeded the capacity of the treater, and one grower near Oxnard tried sprinkling about 1 ounce of Spergon on top of each 25 pounds of bean seed in the planter box. With the planters in use (Ventura model with double seed pickup) considerable seed agitation occurred, and observations by one of the writers indicated that fairly satisfactory seed coverage was secured. The stand obtained from seed treated in this manner was entirely satisfactory, whereas an adjacent field planted with nontreated seed at the same time produced only one-fourth as dense a stand. Other growers who were unable to get their seed treated commercially adopted the same method, and it is estimated that between 3,000 and 4,000 acres of large-lima beans were planted with seed treated in this manner. In field 11, table 1, the dust was applied to the seed in the planter box.

It is estimated that less than 20 acres of large-lima beans were planted with treated seed in 1941, about 1,500 acres in 1942, and approximately 13,000 acres in 1943. Judging from growers' statements it is probable that more than half of the 105,000 acres of large-lima beans in the southern coastal counties will be treated in 1944. The primary benefit of seed treatment has been the improvement in density and uniformity of stand, but the cost will be more than offset by the reduction in the seeding rate.

DIVISION OF PLANT PATHOLOGY AND VENTURA COUNTY AGRICULTURAL EXTENSION SERVICE, UNIVERSITY OF CALIFORNIA)

REPORTS ON PEANUT DISEASES

VIRGINIA AND WEST VIRGINIA: Leaf spot (Cercospora spp.) was prevalent throughout the peanut growing counties in southeastern Virginia visited in company with Dr. E. K. Vaughan, Extension Plant Pathologist of the Virginia Agricultural Extension Service, during the week ending August 30. Although infection was said to be depressed by the recent lack of rain, the disease was causing considerable leaf drop in early fields. Sulfur dusting demonstrations visited showed that defoliation due to leaf spot could be controlled satisfactorily by dusting. Peanut harvest will not start until the middle of September so leaf spot can still become severe. So far, yield loss due to the disease has been negligible.

During the week September 18 leaf spot was found near Abingdon, Virginia, in a garden planting where peanuts had not been grown for years, and in a garden at Morgantown, West Virginia. (Carleton F. Taylor, Emergency Plant Disease Prevention Project).

NORTH AND SOUTH CARCLINA: The peanut-growing regions of North and South Carolina are in 3 areas: in and around Aiken County, South Carolina, where peanuts have been grown for several years; around Florence, South Carolina, in the bright leaf tobacco section a new peanut growing area has developed in the last two years; and in Northeastern North Carolina, the oldest peanut-growing region where peanuts are grown much more intensively than in any other area of the Carolinas.

The reported loss from peanut Cercospora leaf spot varies from 20 to 30% in North Carolina to 1 to 2% in South Carolina. On August 18 and subsequently during that week fields in the new area of both States were visited in Harnett, Cumberland, and Robeson Counties of North Carolina, and in Lee and Sumter Counties of South Carolina. Although the plants were uniformly infected, leaf spot had not developed sufficiently to cause defoliation.

During the following week (August 23 to 28), a trip was made through the old peanut growing region of South Carolina which centers around Aiken County. "This area has been in peanut production for several years, while in most of the other sections of South Carolina peanuts were grown for the first time last year. The only variety planted in this area is the Imperial Spanish. During this week fields in Florence, Lee, Sumter, Lexington, Orangeburg, Bamberg, Barnwell, Allendale, Edgefield, and Aiken Counties were visited.

Many poor stands were encountered. This has been attributed, after a careful survey last year by Mr. W. C. Nettles, Extension Plant Pathologist, to clogging of or some other mechanical failure of the planter.

There was very little leaf spot except in early planted fields where 65% defoliation was found on 2 occasions. These fields were damaged by the leaf spot to the extent of perhaps 25% reduction in yield. Late-planted fields (some were planted as late as July) had a few spots on the lower leaves of every plant. The later planted fields showed up to 20% defoliation. Many leaves had very small spots, especially on the upper leaflets, indicating that the severe leaf spotting was just beginning. One field was partially planted early and partially planted late with the same seed. In the entire length of the field leaf spot was causing 25% defoliation in the early planted part, while there only scattered spots on each plant in the late planted part.

There was great variation in the amount of damage caused by Sclerotium rolfsii observed during this week. Some fields were free from dead plants; others had up to 5% of the plants dead and dying with the stem bases covered with the characteristic mycelium and in some cases sclerotia of the fungus. Few plants were dug but there was considerable rot of nuts on plants adjacent to the dead ones.

In the old peanut growing area of North Carolina there has been no rain since July 22. This drought has caused many "blank pegs" with no set of nuts except at the crown. For this reason the new peanut-growing area was visited first. The counties in which fields were examined during the week ending September 4 were: Harnett, Cumberland, Bladen, Robeson, Columbus, Scotland, and Hoke in North Carolina, and Dillon, Marion, Horry, Florence, and Lee in South Carolina. In most fields leaf spot was just becoming severe with many very small spots, causing less than 10% defoliation. In some fields, however, all the leaflets were spotted and 50 to 60% of the leaves had fallen. The Spanish variety was always more severely damaged than other varieties, whether because of greater susceptibility or earlier maturity is impossible to say. Defoliation amounting to 50% was observed on many farms in this area that had grown peanuts for the first time in 1942. In one 30-acre field where peanuts had never been grown before and which had been planted very late it was difficult to find any spots. At least 10 plants had to be examined before a spot was found.

In a seed treatment experiment in a farm field treated seed gave a tremendous increase in stand over untreated. Both treated and untreated seed had been machine-shelled. The increase in stand was about the same following sweetpotatoes as following cotton. Experiment Station plots on one farm demonstrated effective control of leaf spot by dusting.

It was hoped that a large number of new growers could be found in this area and leaf spot readings could be taken on fields on new land and compared with those of old fields; however, fewer acres of peanuts were planted this year than last throughout the area because of the unpopularity of the crop. This is partly owing to the lack of machinery which meant that some peanuts were threshed in late December, and many were a complete loss. It is difficult to get negroes to work with peanuts; also a price differential for new and old growers last year is partly responsible for the decreased acreage.

During the week ending September 18, peanut fields in the "old belt" of North Carolina were surveyed. The counties visited included Nash, Halifax, Northhampton, Bertie, and Wilson. Prolonged midsummer drought has cut down peanut yields in the entire old peanut growing belt in northeastern North Carolina. Growers in the area around Rocky Mount are predicting a crop of 1/2 to 2/3 normal. Peanut digging began 2 weeks earlier than normal because of the drought. Growers felt that the crop was beyond help from late rains and there was danger of losing peanuts already made. Dry weather has also hindered leaf spot development and although some fields, especially in the southern part of Edgecombe and Bertie Counties, approach 50% defoliation, the disease is not so severe as in former years when average defoliation approached 90%.

The disease causing most damage this year in the old peanut belt is southern blight, Sclerotium rolfsii. The damage varies greatly from field to field, but there is no apparent relation between the amount of

the disease and the previous crop. Perhaps if the prevalence of certain susceptible weed species in the previous crop were known a relationship might be established. The percentage of dead plants is never more than 2, but if those partially killed are counted the percentage in badly affected fields reaches 5. However, many affected plants are not completely or even partially killed. These plants have the characteristic mycelium of S. rolfsii growing on the stems and dead leaves at the base, but the most striking feature on all affected plants is the failure of the nuts to remain attached when the plants are dug and stacked. The nut stems (gynophores) are rotted through by the fungus and on dead or partially dead plants practically all the nuts are left in the ground. Many of the affected plants in various fields have been dug and shaken and the number of nuts left in the soil counted. Plants adjacent to dead plants are not necessarily affected. The only way to recoup this loss of nuts from rotting of the stems would be to turn hogs into fields in which a large amount of S. rolfsii occurred. Perhaps this method of making use of the nuts should be publicized. With the current shortage of feed it is possible that many peanut farmers would be interested.

Another important source of loss to the peanut growers is the rot of peanuts in the soil. This has not been adequately surveyed, but on plants dug at random in fields, as many as half of the nuts were rotten. There are apparently many insects that damage nuts in the soil, but most of the rotten nuts are free from obvious insect injury. This nut rot was not associated particularly with Sclerotium rolfsii blight although on blighted plants most nuts were rotted.

During the week ending September 25 the peanut disease survey was concluded with visits to Hertford, Bertie, Gates, Perquimans, Pasquotank, Amden, Currituck, Washington, and Martin Counties. In this northeastern coastal area of North Carolina runner varieties are grown almost exclusively. Leaf spot was not severe, Sclerotium rolfsii blight is rare, and nut rots are much less extensive than in the counties visited last week, although 5% of the nuts on the average were spotted or partially or completely rotted. Nuts in various stages of rot were cultured. Most of the late stages yielded Penicillium, Trichoderma, or Rhizopus; several nuts from different fields yielded a species of Fusarium; and from other nuts with a characteristic brown spot an unidentified fungus was obtained. S. rolfsii was not isolated from any of the rotted seeds or pods.

Throughout the peanut growing areas of both States the yellow tip of leaflets attributed to leafhoppers has been very common. In the area visited this week and last week, in most fields, the yellowed tissue has turned black and fungi, most commonly species of Alternaria, are fruiton the dead tissue. This trouble may be more extensive or more noticeable this season because of the absence of severe leaf spot and the consequent early defoliation. (R. E. Atkinson, Emergency Plant Disease Prevention Project)

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GEORGIA AND ALABAMA: Spanish peanuts have been grown commercially for a number of years in large areas in southern Georgia and Alabama. The crop has been expanded appreciably during the last few years because of war emergency needs. As a result, many fields are planted to peanuts year after year and Cercospora leaf spot has become progressively more severe. The crop is grown to a less extent in new areas in the central

and northern parts of the 2 States and the disease is much less severe in these new sections.

Considerable time was spent inspecting fields in Barbour County, Alabama, where 65,000 acres were planted to peanuts this year. Leaf spot was present in severe form in every field visited and in fields where peanuts were grown the year before the plants were severely defoliated prior to harvest time. There is no way of estimating accurately reductions in yield of peanuts brought about by leaf spot. However, increases in yield of 300 pounds per acre are common where the plants are dusted with sulfur and copper sulfate. (From work conducted at Georgia Experiment Station and elsewhere). The hay is practically worthless where leaf spot is present in epidemic form. This is a rather important point since there is such a shortage in live-stock feeds.

Inspections were made on a smaller scale in other counties in the old peanut belt and the same conditions prevailed.

The acreage yield of peanuts in the old peanut belt is near 700 to 800 pounds per acre whereas the yields in the new areas are from 1,000 to 1,200 pounds per acre. The differences in yield for the 2 sections are no doubt partly due to leaf spot and other diseases.

Virginia runners are a later crop than the Spanish and it is somewhat hard to make disease comparisons between the two types. Leaf spot was found to be present in severe form on early plantings which would indicate that the disease would become progressively more severe as the crop reached maturity. Losses are not so great on the Virginia runners as on the Spanish crop.

Southern blight (Sclerotium rolfsii) was to be found in practically every field in the old peanut belt both on Spanish and Virginia runner varieties. The disease varied somewhat in severity; in no case were severe losses observed.

During the week ending October 2 several fields of late peanuts were examined in the Augusta, Georgia, area. Cercospora leaf spot was uniformly present with considerable defoliation. (G. M. Stone, Emergency Plant Disease Prevention Project)

FLORIDA: (July 25 to August 31) -- Leaf spot due to Cercospora arachidicola was general but not causing especially heavy defoliation in one extensive planting visited at Aucilla in eastern Jefferson County. Dusting experiments that had been conducted here on a number of plots gave very good control. Sulfur dust was said to give about 18% increase over undusted plots, and copper-sulfur dust about 2 to 3% higher increase, in yield of nuts on the Florida Runner variety. Leaf spot resulted in extensive defoliation in the undusted plots of the North Florida Station at Quincy, Gadsden County, where a large number of varieties were being tested. Here both the spot due to C. arachidicola and the one due to C. personata were observed.

(September 1 to 25) -- Cercospora leaf spot was of general occurrence in all of the many fields examined from Alachua County in central Florida to Escambia County at the extreme western end of the State. It was apparently the only disease of any particular consequence affecting the vines. This disease resulted in defoliation ranging from 25 to 35%, and in one case 50%, in undusted fields. Dusting experiments with sulfur and copper-sulfur dusts conducted in Santa Rosa County by the mobile unit of

the North Florida Experiment Station gave very good control, although, this being the first year such experiments were conducted in this locality, no figures on yield increase were available.

The small leaf spot occurred in all fields examined from Archer (Alachua County), Quincy (Gadsden County), Marianna (Jackson County), and Allentown (Santa Rosa County), all showing the short-spored Cercospora personata. The large leaf spot disease due to Cercospora arachidicola was noted only in one planting near Crestview, Okaloosa County, and the plants in this field were characterized by very scanty sporulation on the leaves.

In the field in the Allentown section of Santa Rosa County, where the dusting experiments were conducted, it was commented that some trouble was being experienced due to discoloration and decay of nuts. A large plant removed for examination showed several nuts in various stages of discoloration or decay and some of the lower stems dead. Subsequent examination of the nuts revealed the mycelium of Rhizoctonia solani, and of the stems, Diplodia natalensis (Physalospora rhodina). In one local area in this field little groups of plants at 3 different points in the rows were found to have wilted and died as though attacked by some soil organism, but upon being dug they were found to have been cut off sharply below the ground line, evidently by the pocket gopher. (Arthur S. Rhoads, Emergency Plant Disease Prevention Project)

MISSISSIPPI: (August 29 to September 4) -- Several peanut fields were observed in Lauderdale, Newton, Scott, and Rankin Counties. Cercospora leaf spot was found in every field, although causing no apparent damage as only a few of the lower leaves were infected with only 1 to 3 infection spots on a leaf. Sclerotium rolfsii was present in every field, in most fields only a trace being observed, but in 1 field approximately 5% of the plants were affected, about 1% being killed and the remaining 4% with from 1 to 3 stems in a hill killed.

(September 27 to October 2) -- Twenty-two fields of peanuts were examined in Leake, Winston, Neshoba, Attala, and Lauderdale Counties. In 15 fields a light infection of Cercospora leaf spot was found; in 3 fields only a trace; and in 4 fields leaf spot was very severe, all leaves being heavily attacked with some defoliation of the lower leaves. Sclerotium rolfsii was found in most fields, infection varying from a trace to 5% in older fields, with less in younger fields, probably owing to continued cool weather during September. Most plants had only from 3 to 5 branches in a hill killed, but occasionally an entire plant was killed. (L. H. Person, Emergency Plant Disease Prevention Project)

TEXAS: (Week ending September 11 - Gulf Coast Plains from Houston-Galveston area to the Corpus Christi-Alice region) -- On the lighter soils 50 to 75 miles back of the coast considerable acreages of peanuts were seen. The generally distributed Cercospora leaf spot (Cercospora personata) was found in moderate to severe infections in all fields. The most serious defoliation occurred in a field in Goliad County. Southern blight occurred generally in the region; in some fields 1 to 2% of the plants had been killed by this fungus. In a dead area within a field near Hempstead, Waller County, several plants showed diseased tap roots thickly beset with sclerotia apparently of the charcoal rot fungus, Sclerotium bataticola.

(Week ending September 18) -- Large acreages of peanuts were seen in Atascosa County. Cercospora leaf spot (Cercospora personata) was general in all fields examined, causing severe defoliation in some cases. This was especially true of older plantings that were nearing maturity. A trace of southern blight was found in most fields. In one location a few dead plants showed what appeared to be the charcoal rot fungus, similar to that observed the week before near Hempstead. (G. M. Watkins, Emergency Plant Disease Prevention Project)

OKLAHOMA: (September 3 to 12) -- Cercospora leaf spot and Rhizoctonia root rot were found in most of the plantings observed, which totalled 4000 to 5000 acres. Leaf spot, causing less than 1% loss, was observed at Soper, Hugo, Mannsville, Ardmore, Purcell, Wayne, Durant, and Geary. The root rot was noted at Mannsville, Hugo, Wayne, and Durant. The loss in all cases was less than 1%. Insect injury still remains the most prevalent cause of loss in peanut plantings in Oklahoma. Moderate to severe injury was present in the Mannsville, Durant, and Wayne areas.

(September 13 to 19) -- Between 7000 and 8000 acres were observed. Plantings were surveyed extensively in the Chickasha, Anadarko, Gracemont, Spring Creek, Tecumseh, Holdenville, Non, Wetumka, Henryetta, Morris, and Boynton areas. Two diseases, leaf spot and root rot, were found in nearly all of the plantings observed; however, in all instances the loss from either was less than 1%. In plantings at Non, primary leaf spot infection was just becoming established. Between Gracemont and Spring Creek, root rot was more extensive than in other regions examined, with the exception of plantings between Morris and Boynton where there was a similar degree of infection. Considerable loss at Tecumseh, Morris, and Boynton resulted from injury to the root systems by gophers, especially in the region east of Tecumseh where a loss of 20% in one field was observed. (Howard W. Larsh, Emergency Plant Disease Prevention Project)

ARKANSAS: (August 21 to 31; 800 acres observed) -- Cercospora leaf spot caused damage of probably 10% in the region around Ozark in northwestern Arkansas (Franklin County). Almost all the plants in one field were affected. Damage was considerably less in other regions. Rhizoctonia root rot was found at Varner (Lincoln County, southeast), Clarkedale (Crittenden County, east), and east of Ozark. In a 40-acre planting near Parking (Cross County, east), a loss of 30% was evident. The disease was prevalent in plantings near Varner but the loss there was less than 20%.

(September 2, 3, and 19) -- Plantings were observed in various regions from Forth Smith to DeQueen in western Arkansas. Cercospora leaf spot was light in amount in all fields examined. Root rot was also light in most plantings, except between Mena and DeQueen. Many plants affected by root rot was observed in 1 planting north of DeQueen. (Howard W. Larsh, Emergency Plant Disease Prevention Project)

REPORTS ON DISEASES OF SOYBEANS

NEW ENGLAND: -- Mosaic (virus) was general and causing very slight to moderate damage in one field at Portland, Maine (August 28). Mosaic of crinkle to rugose type was present in 24 varieties of edible soybeans in

the Kingston, Rhode Island, varietal test plots. Infection ranged from 20 to 90%, causing some reduction in yield. In some cases there was a marked stunting of the plants, (September 13). (Robert C. Cassell, Emergency Plant Disease Prevention Project)

NEW YORK: During the week ending September 26, a disease survey was undertaken in parts of Tompkins, Wayne, Cayuga, Oswego, Onondaga, Madison, Chenango, and Cortland Counties, in Central New York. Diseases of soybeans were given considerable attention.

Downy mildew (Peronospora manshurica) was noted in 4 of the 8 counties visited. The disease was severe on 50% of the plants in a field near South Lansing in Tompkins County and slight on the remainder. Pod infection was not seen but since the plants were still quite green it is possible that with favorable weather the pods may become affected. This field was planted with the variety Seneca and the seed used was locally produced. Fields in the eastern part of Tompkins County exhibited from a trace to moderate infection on 5 to 50% of the plants.

About 2 miles northeast of Auburn in Cayuga County, downy mildew was moderate on 50% of the plants in one field visited; the remainder of the plants in this field bore traces of infection. Two fields between Port Byron and Montezuma showed the disease on 15 to 25% of the leaves of all plants but none on the pods. The disease was light on all plants near South Hannibal but an early-sown crop adjacent appeared to be free of it; the plants in both fields were of the Cayuga variety. Early-sown Cayuga soybeans grown near Ira in Cayuga County were apparently free from the disease.

Near Savannah in Wayne County, downy mildew was moderate on 50% of the plants in 2 different fields.

Near Marathon and Cortland, in Cortland County, downy mildew was slight on from 25 to 100% of the plants in 2 different fields.

Fields near Phoenix in Oswego County, near Clay and Minoa in Onondaga County, were examined but downy mildew was not found. Soybeans were not seen in the parts of Madison and Chenango Counties visited.

Frog-eye leaf spot (Cercospora sojina) was noted on most of the plants in a field near Marathon in Cortland County, but severity was light. Frog-eye was not seen elsewhere but of course it might easily have been overlooked. The fungus causing frog-eye was described first by Hara in 1915 and named Cercospora sojina. Some of the authentic material was deposited with Professor Charles Chupp of Cornell University. Later, Miura described the same fungus and named it C. daizu. Despite this, in the United States, the species name daizu apparently was adopted, and unfortunately is commonly misspelled, being written diazu.

Bacterial blight (Pseudomonas glycinea) was found in all fields visited in the different counties. Usually the severity was limited to a trace on most of the plants, but Cayuga soybeans grown in a field near Ira in Cayuga County exhibited the disease to the extent of moderate on 100% of the plants.

The frog-eye leaf spot has not been reported from New York State previously. (L. J. Tyler, Emergency Plant Disease Prevention Project)

PENNSYLVANIA: -- Franklin County (September 7) -- Bacterial blight was very prevalent (light infection on 90% of the plants) in fields in the

vicinity of Greencastle, and was also noted in fields (trace on most of the plants) in the vicinity of Upton, Williamson, and Greenvillage.

A root rot was prevalent in fields near Upton, Williamson, and Greenvillage. The disease in these fields was made evident by the occurrence of circular areas varying in diameter from a few feet to 2 rods within which most of the plants were dead. Surrounding these patches there was much yellowing and shedding of leaves of some plants. Much of the latter condition was doubtless due to the severe drought. However, the roots of some of the yellowed plants exhibited symptoms similar to those noted on the dead plants. It is probable that one or more of the fungi such as Pythium, Rhizoctonia, and Fusarium were responsible. Mycelium characteristic of Rhizoctonia and some Fusarium spores were found on microscope mounts.

A pod and stem blight was present on a few plants in one field but the causal agent has not been determined.

Northampton County (September 10) -- Light infection with bacterial leaf spot occurred on 50% of the plants in a field near Moorestown. (L. J. Tyler, Emergency Plant Disease Prevention Project)

DELAWARE AND MARYLAND: -- Most fields visited in Newcastle County at the end of August were relatively free from diseases except for an increasing amount of bacterial pustule (Xanthomonas phaseoli var. sojense). Considerable drought injury was noticed, resulting in marginal leaf burning and death of some plants in some areas where the soil was low in fertility. Bacterial pustule was the only disease noted in Kent County also. Drought was cutting the stand; in a 3-acre field near Clayton half of the plants had been killed by drought. In Sussex County, a month later, fields showed a slight amount of bacterial pustule and very light infection, by frog-eye leaf spot. Pod diseases were not observed.

On the Eastern Shore of Maryland during the latter part of September soybeans were relatively free from diseases because of the extreme drought. Pustular spot was found in several fields in Talbot County, and Cercospora leaf spot and pod blight (C. sojina) in Talbot and Caroline Counties. Drought injury was severe near Preston in Caroline County. (E. A. Walker, Emergency Plant Disease Prevention Project)

NORTH CAROLINA: -- The counties visited in the peanut disease survey are the most important in North Carolina in the amount of soybeans harvested for seed. In other counties of North and South Carolina the only serious leaf disease is the bacterial pustule leaf spot. It is causing serious defoliation of certain varieties in all sections. However, in the counties visited this week (Hertford, Bertie, Gates, Perquimans, Pasquotank, Amden, Currituck, Washington, and Martin in the northern coastal area of North Carolina), although the bacterial pustule is present and causing some damage, downy mildew is more common and appears to be more serious. It is present in 7 out 10 fields and the younger leaves in the fields are already covered with spots which in all cases observed are in the early stages of development. The fungus is fruiting abundantly and cool wet weather has predominated for the past 2 weeks. (R. E. Atkinson, Emergency Plant Disease Prevention Project. September 20 to 25)

FLORIDA: (July 25 to August 31) -- Test plots of more than 60 varieties at the North Florida Station at Quincy and also at the Main Station at Gainesville were characterized by severe defoliation, due largely to frog-eye and bacterial pustule. Defoliation was further intensified by the velvet bean caterpillar in the plots at Gainesville. The pods were severely attacked by anthracnose (Glomerella glycines). The prevalence of the latter disease would at first consideration appear to make it a limiting factor in soybean culture in Florida. However, the majority of the pods attacked are characterized by little or no evidence of seed-formation and fail to fill out properly and shrivel prematurely and fall. Inability to secure seed production is a problem that must be solved before soybean culture can become a commercial possibility in Florida. In many cases ovules are produced and develop to some extent, but are frequently brownish, as though stung by some insect or diseased, and occasionally show mycelium of some fungus growing on them. Factors other than diseases in insects apparently are involved in this problem.

(September 1 to 25) -- An extensive experimental planting of the Mamloxi soybean near Jay in Santa Rosa County was examined and found to be free from disease other than a little bacterial spot. However, the plants in general were characterized by the striking failure to set and develop pods. Another experimental planting of the Nanking variety at Oak Grove, Escambia County, also proved to be free from disease, but appeared to be setting a good crop of pods. (Arthur S. Rhoads, Emergency Plant Disease Prevention Project)

MISSISSIPPI: (September 27 to October 2) -- In all fields observed, bacterial blight and bacterial pustule were abundant, the pustule being the most prevalent.

In one 3-acre field in Neshoba County from 8 to 10% of the plants were killed, Sclerotium bataticola infection was evident in all plants extending from 10 to 14 inches up the stems.

In a 2-acre field in Newton County, approximately 5% of the plants had been killed in the upper portions. These plants were only 12 inches high while the rest of the plants were from 36 to 40 inches high. Diaporthe (pycnidial stage) was found on the attacked plants. An occasional plant was found in this field that had been killed by Sclerotium bataticola. The Macrophomina (M. phaseoli) stage was fruiting on the stems.

One field of 5 acres, Edsoy variety, at Starkville had from 95 to 98% of the plants killed. Diaporthe (pycnidial stage) was fruiting abundantly on the stems; however, S. bataticola was found associated with all dead plants examined. The summer was very dry and hot, which favors the development of this fungus, and it is reasonable to suppose that S. bataticola was the primary cause of the widespread killing of soybeans in Mississippi.

In another field of 6 to 8 acres at Starkville, containing several varieties, from 90 to 95% of the plants were killed. In this field S. bataticola was associated with all the stems examined, and some Diaporthe was found but the latter fungus was less prevalent than in the Edsoy field. (L. H. Person, Emergency Plant Disease Prevention Project)

LOUISIANA: (August 23 to 28) -- A trip was made through the rice-growing section of Louisiana in Acadia, Vermillion, Jefferson Davis, and

Calcasieu Parishes. A number of soybean fields were observed and bacterial pustule was present in all fields. In most fields 100% of the plants were attacked. A trace of Sclerotium rolfsii was found in all fields examined. In one field a trace of Diaporthe sojae was found.

(September 6 to 11) -- In soybean fields observed in St. Landry Parish, bacterial pustule was the most widely distributed disease, being present in all fields examined. Cercospora leaf spot was also found, but was much less prevalent than the bacterial disease. (L. H. Person, Emergency Plant Disease Prevention Project)

ARKANSAS: Some 80 varieties and 2740 acres of soybeans were observed August 21 to 31; many, however, were not in commercial plantings. Except as indicated, the diseases reported were general in distribution but severity varied from region to region and only the most serious attacks noted are mentioned specifically. Bacterial pustule was very severe near Texarkana in extreme southwestern Arkansas (Miller County), and Clarkedale in the eastern part (Crittenden County), where leaves were severely spotted and considerable defoliation resulted. The loss was estimated at 5%. Bacterial blight occurred in most plantings observed but no attempt was made to separate the loss caused by this disease from that due to bacterial pustule. Pod and stem blight (Diaporthe sojae) was found in all plantings examined. Considerable damage was noted at Clarkedale, and at Keiser and Osceola in Mississippi County (extreme northeast). In many plantings in these regions the loss was 2%. Wilt [presumably Fusarium] was found in many plantings, loss being less than 1%. Damage was greater at Marianna (Lee County, east) and McGehee (Desha County, southeast). Cercospora leaf spot was found in 2 or 3 plantings, at McGehee and Stuttgart (Arkansas County, east), causing not more than a trace of loss. Downy mildew was found on a few leaves on plants of one variety at Stuttgart and Clarkedale. Apparently downy mildew has not been reported from Arkansas previously. Mosaic occurred on 1 or 2 plants in most fields, more infected plants being found in the McGehee plantings. (Howard W. Larsh, Emergency Plant Disease Prevention Project)

OHIO: (August 30 to September 4) -- Fields examined between Columbus in central Ohio and Fostoria in the north were found to be only lightly infected with bacterial pustule. Only the lower older leaves were infected. Downy mildew is becoming increasingly evident in many fields in northeastern Ohio. A few plants were seen with a stem canker believed to be caused by Diaporthe sojae but no spores had developed and apparently the disease is just beginning to appear.

(September 20 to 25) -- During the past week an extensive survey was made of the soybean areas in the western half of Ohio. Over most of the area the soybean crop was mature. Many fields were seen that were completely defoliated and in excellent condition to be harvested. In those portions of the State where rainfall had been unusually heavy many bean fields were still green. Very few fields had been damaged by frost.

Bacterial pustule was present in every field observed. In 3 fields out of 49 it was severe enough to cause extensive defoliation. In 6 fields it was doing appreciable damage. Some leaves were killed completely and the lower leaves were usually heavily infected. In the remaining 40 fields inspected the disease was causing little or no appreciable damage.

Frog-eye disease was severe in 3 of the fields inspected where it caused severe defoliation. In 1 field of 40 acres the disease was so severe that 25% of the leaves were killed and there were numerous stem lesions. The yield was sharply reduced. This disease was observed in 13 other fields where it was doing little damage and was seldom present on more than an occasional leaf. In 33 of the fields examined the disease was not found.

Pod and stem blight was observed to be rather extensive in 1 field in southern Ohio. Together with the frog-eye disease it was doing considerable damage. On lesions examined under the microscope the spores of the fungus were immature. Numerous pycnidia were beginning to develop in the stem lesions, but none were observed on the pods.

Downy mildew was recorded in only 3 fields and was doing no damage.

The disease known as "bud blight," which seems to be due to a virus, was found in 22 of the 49 fields examined. In 1 field the disease was severe and caused a 75% reduction in yield. Pods on infected plants either did not form or blighted and fell off before filling. The leaves were puckered but showed little or no indication of a mosaic pattern. When examined internally the pith of infected plants was completely disintegrated and the stem had the appearance of having been attacked by an insect. Less severly infected plants showed the pith quite brown and sometimes segmented. In 3 fields the disease was doing an appreciable amount of damage and affected from 10 to 15% of the plants. In 18 of the 49 fields examined an occasional plant showing bud blight symptoms was found. No plant was diagnosed as having the "bud blight" unless the pith showed a brown condition.

Anthracnose was found in 1 field on 1 plant.

(September 27 to October 2) -- Continuing the survey of last week soybeans were inspected in the eastern and northeastern part of Ohio. The acreage here is less than in other sections. Many fields in these areas are mature but slightly less than half of the fields examined were still partially green and would need a week or more of good weather to mature completely.

Bacterial pustule was present in all of the 27 fields inspected. In 3 of the fields it was severe enough to defoliate the plants partially. In others it was of little or no economic importance, only the lower leaves showing lesions.

Frog-eye disease was severe in 2 fields where from 10 to 15% of the leaves were killed and others heavily spotted. In 2 other fields the disease was doing some damage which has reduced the leaves by 5%. In 10 fields a trace was found. Stem lesions were numerous especially in the 4 heavily infected fields. Eleven fields were found to be free from the disease.

Pod and stem blight was found in 1 field where together with the frog-eye disease it caused severe damage to the stand. It was estimated that there will be a 50% reduction of the crop. Numerous lesions on both stems and pods were showing pycnidia.

Bud blight was doing some damage in 2 fields where there was a 10% reduction in yield. Nine other fields showed traces of the disease but it was doing no damage. In 1 field there was a trace of soybean mosaic. Ten fields were free from virus diseases.

(October 4 to 9) -- The 40-acre field near Hamilton inspected earlier in the season (September 20 to 25), when it was found to be heavily affected by frog-eye leaf spot, was inspected again this week. It was being harvested at the time of inspection. The grower said that he obtained only 50% of the normal yield, because of this disease. He followed the practice of planting seed taken from the previous year's crop. Each year for the past few years the crop was gradually being reduced. A sample of soybean seeds from this field contained many that were light in weight or discolored. (M. R. Harris, Emergency Plant Disease Prevention Project)

INDIANA: From August 24 to 27 a survey was made in northwestern Indiana. Most of the fields of soybeans examined were infected severely with bacterial blight or pustular spot. Half of the fields were affected slightly to severely with downy mildew.

From September 16 to 18 a survey was made in the southeastern part of Indiana in the company of Dr. A. J. Ullstrup. Three of the 9 fields of soybeans examined were infected slightly to moderately with Cercospora sojina. This disease appears to be limited to the southern half of the State. Five of the 9 fields contained a trace to slight pustular spot and a like number of the fields a trace to moderate downy mildew. A few plants affected with stem blight were found in 2 fields. About 2% of the plants in 1 field were infected with mosaic. In another field an occasional plant bearing pods with brown more or less circular or ringspot areas was found. This disease appears to be similar to that caused by the tobacco ringspot virus.

From September 21 to 24 a survey was made in Tippecanoe County in the vicinity of Lafayette and in central and western Indiana. There was very little change in soybean disease conditions over those observed a month earlier (PDR 27:300, Sept. 1). The plants and beans were maturing rapidly and most of the fields were nearly defoliated. An occasional field planted with an early-maturing variety was being combined. A trace of stem blight was found in the fields of matured plants.

In northeastern Indiana, September 27 to October 2, soybeans were affected slightly to moderately by pustular spot. A slight amount of downy mildew occurred in half of the fields examined and moderate frog-eye leaf spot in one field near Kokomo. A trace of Diaporthe stem and pod blight occurred in one field, and in fields in which the plants were defoliated and the beans nearly mature the stems usually were invaded and colored dark by an undetermined fungus (R. C. Baines, Emergency Plant Disease Prevention Project)

ILLINOIS: On August 30 and 31, a survey was made of the diseases occurring on corn and soybeans across central Illinois from Urbana to Lincoln, Springfield, Beardstown, Rushville, Jacksonville, Waverly, Taylorville, and Decatur. This survey was conducted with the assistance of Dr. Benjamin Koehler of the Illinois Agricultural Experiment Station and Dr. Wm. B. Allington of the Division of Forage Crops and Diseases, U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering.

Soybeans in this area generally were infected with downy mildew and pustular spot or bacterial blight. Occasionally only one of these diseases was found in a field of soybeans. The severity of infection ranged from

moderate to severe and very likely these diseases will cause appreciable reduction of foliage, and very likely the yield, as the season progresses.

In a field near Jacksonville, occasional plants affected with pod and stem blight (Diaporthe) and a root rot of undetermined origin, were found.

A few plants bearing pods with dark necrotic areas or spots were found in a number of fields. Such affected pods were easily detached, and likely would not mature. The cause of this trouble has not been worked out. (R. C. Baines, Emergency Plant Disease Prevention Project)

MICHIGAN: (August 23 to 28) -- Most fields in southeastern Michigan are late and the bulk of the blossoms are just now out. About half of the fields surveyed are supporting a heavy growth of weeds. Bacterial pustule was not doing any damage and was difficult to find.

(September 13 to 18) -- Over the southern half of the State soybeans produced a normal crop only on the better soils. Many fields were planted late and were overgrown with weeds. As the season came to a close bacterial pustule made its appearance and affected about 20% of the leaves in most fields. The infection was light and no appreciable reduction of yield resulted. At the time data for this report was collected frost had damaged the crop only on muck soil areas. (M. R. Harris, Emergency Plant Disease Prevention Project)

MINNESOTA: During the week ending September 18, the survey was made in 13 southeastern counties. Most soybean fields were still in the hay stage, only a very few approaching maturity. Bacterial pustule and bacterial blight are widely distributed but are doing little damage. (Ian W. Tervet, Emergency Plant Disease Prevention Project)

IOWA AND MISSOURI: On September 14, 15, and 16, in company with Dr. George Semeniuk of the Iowa Agricultural Experiment Station, corn and soybean fields in the western portion of Iowa were surveyed for the incidence of disease. Observations were made in Boone, Webster, Humboldt, Kossuth, Palo Alto, Clay, O'Brien, Cherokee, Crawford, Shelby, Adams, Union, Cass, Montgomery, Warren, and Polk Counties. Bacterial pustule was present in every soybean field examined. From 10 to 100% of the foliage was infected in the different fields, but an average of only about 4% of the total leaf area was involved. The disease tentatively called "bud blight," (virus suspected), characterized chiefly by the blighting of the terminal bud, the general failure of pod set, a purple discoloration of the pith and sometimes a marked dwarfing of the entire plant, was found in 3/4 of the fields visited. The percentage of plants affected ranged from a trace in some fields to 100% in others, averaging 23% for all fields. No estimate was made of the possible reduction in yield, but in the most severely diseased planting observed, it appeared as though vine growth and pod development would be only about a third of normal. Downy mildew was noted in 3 of the 21 fields inspected. These affected fields were situated in Adams and Union Counties. Infection ranged from a trace to 75%, an average of about 20% of the foliage showing lesions in the early stages of development. A trace of anthracnose was observed in 1 field and 2 fields showed a trace of stem and pod blight.

During the week of September 20 to 25 inclusive, a survey was made from

Ames, Iowa to the eastern boundary of the State in the vicinity of Clinton, then south along the Mississippi River to the vicinity of St. Louis, Missouri, and up the Missouri River Valley to Columbia. In Iowa, except for some late-planted fields, the beans were mature or maturing rapidly. Only fields in which most of the foliage was still green were examined. The bacterial leaf spots, bacterial pustule and bacterial blight, were prevalent in all fields. The percentage of foliage infected ranged from 10 to 100%, averaging 57%. The leaf area involved by the lesions ranged from 1 to 10%, averaging 3%. Bud blight was present in 50% of the fields. In general only a trace was scattered through the fields, although 1 field was observed in which 80% of the plants showed typical symptoms, with an estimated 50% reduction in vine growth and pod set. A trace of stem and pod blight was found in 20% of the fields. In 1 field in the vicinity of Keokuk, downy mildew in the early stages of development was noted, affecting 1 to 2% of the lower leaves. Slight frost damage was noted in all fields.

In Missouri, as in Iowa, only late-planted, green fields were selected for examination. The bacterial leaf spots were present in all fields, from 3 to 75% of the foliage showing lesions (average 18%), involving an average of 1% of the leaf area. Downy mildew was noted in 50% of the fields. Lesions were in the early stages of development and on an average were found on 8% of the leaves, involving about 1% of the leaf area. Bud blight (virus) was found in 75% of the fields, affecting from 1 to 75% of the plants, averaging 33%. A trace of stem and pod blight was observed in one-fourth of the fields examined.

Corn and soybeans were the principal crops surveyed during the week ending October 2. The Missouri River was followed in Missouri from Columbia to the northwestern corner of the State. Continuous precipitation on September 28 and 29 limited the extent of the survey in the most western tier of counties. Except for a few late-planted fields, the beans were mature and practically defoliated, or had already been cut for hay. The bacterial leaf spots were prevalent in all fields. An average of 50% of the foliage was affected, the lesions covering an estimated 5% of the leaf area. Bud blight was observed in about half of the fields, ranging from a trace to 30% of the plants showing typical symptoms. Downy mildew in the early stages of development and confined to the lower leaves, was noted in 1 field. (T. W. Bretz, Emergency Plant Disease Prevention Project)

DISEASES OF OTHER LEGUMINOUS FORAGE AND COVER CROPS

NEW ENGLAND: Alfalfa -- Leaf spot (Pseudopeziza medicaginis) was causing slight damage at Highmoor Farm in Maine (August 22 to 28).

Clover -- Slight to moderate amounts of leaf spot (Pseudopeziza trifolii) and rust (Uromyces trifolii var. fallens) occurred on red clover in Brookton and Fort Fairfield, Maine. In Connecticut powdery mildew (Erysiphe polygoni) was generally distributed, and slight to severe damage was noted in Wethersfield and Hamden. Rust was found in Hamden and Southington, where it was causing very slight damage although general in the fields (September 5 to 11). (R. C. Cassell, Emergency Plant Disease Prevention Project)

NEW YORK: -- During the week ending September 26, a disease survey was undertaken in parts of Tompkins, Wayne, Cayuga, Oswego, Onondaga, Madison, Chenango, and Cortland Counties, in central New York. Particular attention was given to diseases of alfalfa and clovers since these crops are important in this area. Professor Charles Chupp of Cornell assisted in the identification of some of the diseases.

Alfalfa -- Bacterial wilt (Corynebacterium insidiosum) was observed in fields near Venice Center, Owasco Lake, and Oakwood in Cayuga County. The stands in these fields varied from 25% to full stands. Twenty-five percent of the plants remaining exhibited definite symptoms of wilt. Only 1 field visited in Cayuga County was apparently free from wilt. This field had been in alfalfa 3 times and the stand was good. It had never been pastured. The grower did not recall the variety name but he obtained the seed locally.

Wilt was observed in fields in all other counties visited during the week and usually the extent of infection appeared as a trace. However, stands in many fields were greatly depleted; possibly as a result of wilt. One field near Meridian, with a 5-year-old stand, exhibited about 20% of wilting plants; about 50% of a full stand remained.

Pseudopeziza leaf spot was generally prevalent in alfalfa fields in the different counties. The disease was moderate to severe on all plants in fields near Venice Center and Oakwood in Cayuga County, and Greene in Chenango County.

Stemphylium leaf spot (Stemphylium sarciaeforme) was generally prevalent everywhere but did not appear to be particularly destructive.

Stagonospora leaf spot (Stagonospora carpatica) was observed in 1 field near Whitney Point in Broome County. Very slight infection existed on 25% of the plants.

Pseudoplea leaf spot (Pseudoplea trifolii) was moderate on at least 75% of the plants in a field near Cazenovia in Madison County.

Stem cankers, black in color, and girdled stems were frequently found on plants in many different fields. The identity of the causal organism (or agents) was not established but it was obvious that considerable damage had resulted from such troubles.

Clover -- Rust (Uromyces) was moderate to severe on all plants in fields near Phoenix in Oswego County and Minoa in Onondaga County. In the Minoa field the stems as well as leaflets were almost covered with pustules.

Pseudopeziza leaf spot (Pseudopeziza trifolii) was observed in red clover fields near Scipio in Cayuga County, Phoenix in Oswego County, and Minoa in Onondaga County. Infection varied from light on all plants to severe on all.

Stemphylium leaf spot (Stempnylium sarcinaeforme) was noted frequently in clover fields everywhere but infection usually was slight.

Sooty blotch (Cymadothea trifolii) was found to be moderately severe on at least 25% of the plants in a field near Scipio in Cayuga County.

Powdery mildew was everywhere prevalent on red clover and in many fields considerable damage was evident.

Clover mosaic (virus) usually could be found in red and alsike clover fields throughout the area visited. (L. J. Tyler, Emergency Plant Disease Prevention Project)

NEW JERSEY: -- Clover -- Five acres of alsike clover near Deepwater had taken on a grayish cast from powdery mildew. Other clover fields in the drought area showed an indication of the disease. (E. A. Walker, Emergency Plant Disease Prevention Project, Auguat 16 to 21)

PENNSYLVANIA: -- During the week ending September 4, Bucks, Montgomery, Lancaster, and York Counties were visited in company with Dr. R. S. Kirby of Pennsylvania State College. During the following week crops were examined in Adam, Franklin, Cumberland, Dauphin, Lebanon, Berks, Lehigh, and Northampton Counties. Dr. Kirby and Dr. F. H. Lewis were collaborators and the county agents rendered valuable aid.

Alfalfa -- Pseudopeziza leaf spot was light to moderate on most plants in fields near Souderton and Norristown, Montgomery County. Many dwarfed plants were noted in these same fields; the cause of this condition needs further study.

Pseudopeziza leaf spot was moderate on most of the plants in fields near Morrisville, Bucks County.

In Lancaster County, 6 fields between Lancaster and York were carefully examined for bacterial wilt but it was not found. Pseudopeziza leaf spot was light in 3 of the 6 fields and prevalent to the extent of a trace in the others. In 3 of the 6 fields from 5 to 15% of the plants were dwarfed and yellow.

Pseudopeziza leaf spot was found in 8 widely distributed fields in Adams County, but infection was very slight on most of the plants examined; it was also very slight on most of the plants in fields south and west of Carlisle, Cumberland County; and was present to the extent of a trace on 25% to light on all plants in fields near Jamestown and Cornwall, respectively, in Lebanon County.

Since much alfalfa is grown for artificial drying in parts of Lehigh and Northampton Counties and since it was learned that alfalfa stands deteriorate rather soon a survey of alfalfa diseases was made between Allentown and Bath and in the vicinity of Nazareth.

Pseudopeziza leaf spot was found to be rather variable in prevalence and severity. Only a trace was found on 10 to 50% of the plants in fields near Allentown in Lehigh County. Fields in the vicinity of Nazareth in Northampton County exhibited anywhere from a trace on 10% of the plants to severe infection on all plants.

Examination of several widely separated fields revealed the presence of many dwarfed plants, some of which were yellowed. Usually the yellowing and shedding of leaves was confined to the smaller dwarfed plants but not always. Sometimes plants normal in size were partly yellowed and had shed some leaves.

It is well known that yellowing and dwarfing of alfalfa may be brought on by mineral deficiencies, heat and drought, and by leaf hoppers. Since it has been rather dry and hot in southeastern Pennsylvania it is possible that the second-crop plants observed may have suffered. However, examination of many of the dwarfed and yellowed plants revealed pale brown discoloration of the outermost tissue of the taproot immediately underneath the bark. This is usually considered as a symptom of bacterial wilt but it appears that a more thorough survey is needed and that such specimens need to be cultured in order to definitely establish the presence of this disease. Should specimens exhibiting discolored root tissue yield the bacterial wilt organism then it would at once be obvious that the disease is

very prevalent in Pennsylvania.

Clover -- Powdery mildew in moderate amounts on most of the plants was noted in almost all clover fields in Montgomery County.

Macrosporium leaf spot (Macrosporium sarcinaeforme -- Pleospora herbarum) usually existed to the extent of a trace on 10 to 20% of the plants in fields examined in Adams County; a scant trace on 10% of the plants was observed in one field visited near Carlisle in Cumberland County; and light infections occurred on 90% of the plants in a field between Allentown and Bath in Northampton County. Pseudopeziza leaf spot was slight on most of the plants in the last-named location. (L. J. Tyler, Emergency Plant Disease Prevention Project)

DELAWARE:-- (August 23 to 27) -- Alfalfa -- Light to moderate amounts of Pseudopeziza leaf spot occurred generally in alfalfa fields visited in Newcastle County, on new growth following the second cutting. In Kent County the disease was severe in a field south of Clayton.

Clover -- Powdery mildew was beginning to appear on alsike clover in Newcastle County.

Lespedeza -- (September 20 to 25) - No diseases were found in several fields of Lespedeza sericea visited near Seaford in Sussex County. (E. A. Walker, Emergency Plant Disease Prevention Project)

MARYLAND: -- Clover -- Powdery mildew was spreading in all alsike and red clover fields observed in Talbot County on the Eastern Shore. (E. A. Walker, Emergency Plant Disease Prevention Project, September 20 to 25).

Georgia: -- Cowpea -- Large acreages are planted in Burke, Jefferson, and Richmond Counties. The season had been rather dry from the past 2 or 3 weeks. However, abundant rain fell at planting time.

Powdery mildew (Erysiphe polygoni) was found in every field examined. The extent of disease development varied from new infections on crops just beginning to bloom to complete defoliation in the case of earlier crops. In some cases the leaf petioles and the ends of branches were killed, giving a "dieback" or "dead arm" appearance to the plants. Powdery mildew probably caused a greater loss to the crop than was caused by the dry season. It was apparent that growth was stunted, in some fields severely, by the dry weather but there was sufficient growth to produce a fair crop. The loss from powdery mildew was estimated to be about 25 to 30% as an average for all fields examined.

Amerosporium oeconomicum and Cercospora leaf spots were found scattered in many fields with little to no damage.

Fusarium wilt (Fusarium bulbigenum var. tracheiphilum) was found in one field where from 5 to 10% of the plants were affected.

Bacterial leaf spot [organism not specified] was found scattered in several fields. (G. M. Stone, Emergency Plant Disease Prevention Project, September 27 to October 2)

FLORIDA: -- Cowpea -- Cowpeas at the North Florida Station at Quincy, in August exhibited considerable defoliation from a combination of 2 leaf spots, Cercospora dolichi and Amerosporium oeconomicum. A number of unthrifty plants showed extensive development of root know (Heterodera marioni). Cowpea plantings examined at Gainesville were so old that de-

foliation from various causes was quite general and the stems and pods were very commonly invaded by saprophytic organisms.

Kudzu -- Kudzu at the North Florida Station in August exhibited considerable bacterial leaf spot (Pseudomonas medicaginis var. phaseolicola), but the spots were very small and the disease was not sufficiently severe to result in much defoliation.

Velvet Bean -- (August) -- Farmers in sections of West Florida who have been getting by for years without using commercial fertilizers have been experiencing considerable difficulty of late in making crops of velvet beans. An interesting experiment in fertilizer treatments conducted by one of the mobile units of the North Florida Station at Monticello was visited to get an insight into this trouble. Plants with no fertilizer consistently make a very weak growth, with scanty seed formation. The leaves become distinctly chlorotic and the margins fire and die, and the plants become defoliated early. It was apparent that the plants responded to applications of potash, phosphoric acid and dolomitic limestone. The failure to grow this crop successfully was shown to be due to potash deficiency. No striking results were secured from trials of minor elements and 5 pounds of borax per acre proved decidedly toxic.

Leaf spot (Cercospora stizolobiae) was causing severe defoliation at the North Florida Station at Quincy, greatly intensified by attacks of the velvet bean caterpillar.

(September) -- The Cercospora leaf spot was of general occurrence, causing considerable defoliation in all plantings examined. Specimens were collected at Perry (Taylor County) near Allentown (Santa Rosa County).

Much more serious defoliation of plantings, however, usually was caused by the velvet bean caterpillar (Anticarsia gemmatilis). In one plot at the North Florida Experiment Station at Quincy, a remarkable instance was observed of natural control of this insect by the mold fungus, Spicaria javanica. Nearly all the caterpillars at one point in this plot were attacked and killed and parasitized specimens could be seen in all directions on the plants. About 75 good specimens were picked in less than a quarter of an hour and hundreds could have been secured. So complete was the destruction that very few live caterpillars were left. Unfortunately, the epidemic of this disease came after the caterpillars had already done most of their damage for the season.

Alyce Clover (Alysicarpus vaginalis) -- In a planting of Alyce clover at the North Florida Station in August, a considerable percentage of the plants were characterized by chlorotic leaves showing firing along the edges. This trouble had the appearance of a potash deficiency. (Arthur S. Rhoads, Emergency Plant Disease Prevention Project)

OKLAHOMA: Alfalfa (1800 to 1900 acres observed) -- Alfalfa plantings were examined in most of the 22 counties surveyed from September 3 to 12. Two diseases were observed at Washington and Ingersoll, -- Pseudopeziza leaf spot and rust (Uromcyes striatus), neither being severe enough to cause much loss. At Ingersoll, however, rust was present to such an extent that lower leaves of several plants had fallen off. Rust was prevalent in the vicinities of Lexington and Supply, especially in fields near Lexington; at Supply rust was found only on the older plants.

Cowpea -- Five diseases were observed in the various plantings examined during the week ending September 12; however, not all plantings showed all of the diseases. From 1 to 2% loss could be attributed to Cerco-

spora sp. in the Hugo (Choctaw County, southeast), Durant (Bryan County, south), Washington (McClain County, central), Stillwater (Payne County, northcentral), and Woodward (northwest) areas.

Three diseases were found at Woodward and Supply, namely, powdery mildew, rust (Uromyces phaseoli var. vignae), and Fusarium wilt. Rust and powdery mildew occurred at both places, both diseases together causing a loss estimated at 3%. Wilt was found only in the planting at Supply where it was causing nearly 5% loss.

The presence of bacterial crown canker is reported elsewhere in this issue (see under New Records). (Howard W. Larsh, Emergency Plant Disease Prevention Project)

ARLKANSAS: -- Alfalfa (350 acres observed) -- Alfalfa fields in the region between Marianna (Lee County) and Hughes (St. Francis County), in eastern Arkansas, showed a moderate infection of rust, with a loss of perhaps 5 to 10% in those fields most severely attacked. Fields near Keiser in Mississippi County (northeast) showed a similar amount of rust. Pseudopeziza leaf spot was found in fields near Keiser but was causing very little damage.

Cowpea (125 acres) -- The most important disease observed on cowpeas during this survey was Cercospora leaf spot (Cercospora sp.) In plantings at Hope (southwest) several varieties were affected with a loss of nearly 25%. At Stuttgart (east) the disease was very serious, causing a damage of 30 to 35%. The disease occurred to a lesser extent in plantings near Wynne (Cross County, east).

A stem blight attacking the plants near the collar was quite prevalent in plantings at Hope and Stuttgart, the symptoms resembling very closely those found on soybeans. Many plants had been killed, and the damage was estimated at 15%.

Fusarium wilt was not at all uncommon in most of the plantings observed, and in fields near Stuttgart it caused a loss of 5%.

Bacterial blight [Xanthomonas phaseoli or Pseudomonas syringae, organism not specified] and mosaic (virus) were found on only a few plants in one field between Wynne and McCrory. (Howard W. Larsh, Emergency Plant Disease Prevention Project)

MICHIGAN: -- Alfalfa -- Fields were surveyed between Lansing and Detroit, around Ann Arbor, and between Saint Johns and Owosso. Bacterial wilt was found in all but a few fields. The amount was closely correlated with the age of the field, many older fields having a very sparse stand, while some year-old fields had a heavy stand of wilt-free plants. In many old fields, timothy and clover are mixed in the stand. In some fields as many as 10% of the alfalfa plants were infected. (M. R. Harris, Emergency Plant Disease Prevention Project. August 23 to 28)

NEW MEXICO: -- Alfalfa -- Bacterial wilt was very widespread in the counties surveyed during the period from September 7 to 20, mostly in slight to moderate amounts. The following tabulation indicates the size and number of fields with varying degrees of infection in the various counties.

Size of Alfalfa Fields with Indicated Amount of Bacterial Wilt

County	Very Slight	Slight	Moderate	Heavy	County	Very Slight	Slight	Moderate	Heavy
Dona Ana	10	40	6	40	Quay			2	
	20		5		De Baca			5	8
	9				Socorro				1.5
Sierra			6		Valencia		2		
Otero	2				Berna-				
Eddy		40	10		lillo		14		
		10	40				2.6		
			30		Santa				
Chaves		30		60	Fe	1.5			
		4			Rio				
		120			Arriba		2		
Roosevelt		2			Taos			1.5	
					San Juan	8		7	
Total Acreage -						50.5	266.6	112.5	109.5
Total Number of Fields -						6	11	10	4

Other diseases encountered were much less prevalent. Pseudopeziza leaf spot was most common; it occurred in slight to moderate amounts in 12 fields, one being a 100-acre field in Dona Ana County, the others ranging from a tenth-acre patch in Bernalillo County to 10 acres in Chaves County. Counties in which it was found, besides those already named, were Sierra, Otero, De Baca, Socorro, Santa Fe, Rio Arriba, Taos, and San Juan. Moderate amounts of rust were noted in one 10-acre and one 100-acre field in Dona Ana County. Phymatotrichum omnivorum root rot was causing severe damage in 2 fields, of 10 and 30 acres, and slight damage in a 20-acre field, in Eddy County; leaf spot caused by Ascochyta imperfecta occurred in slight amounts in a 100-acre field in Dona Ana County; a moderate infection of downy mildew (Peronospora trifoliorum) was found in a 2-acre field in Otero County; dodder (Cuscuta sp.) was causing very slight damage in an 8-acre field in San Juan County; white spot (non-parasitic) caused moderate damage in a field in Dona Ana County and slight damage in another in Roosevelt County; and girdle (insect activity) was unimportant in a Chaves County field. (Wm. G. Hoyman, Emergency Plant Disease Prevention Project)

ARIZONA: -- Alfalfa -- Alfalfa fields were surveyed in Apache, Navajo, Yavapai, and Maricopa Counties. Bacterial wilt occurred in all 4 counties, in 13 fields, mostly in amounts from very slight to moderate. It was severe in one field in Yavapai and another small field in Maricopa County. Slight amounts of Pseudopeziza leaf spot and of downy mildew were found in 5 fields and in 4 fields, respectively, in Apache and Navajo Counties. Phymatotrichum root rot was severe in a 3/4-acre plot in Yavapai County; one small field in Navajo County had a very slight amount of dodder; one field in Yavapai County was very slightly affected by girdle. (Wm. G. Hoyman, Emergency Plant Disease Prevention Project. September 21 to 25)

REPORTS ON CORN DISEASES

SWEET CORN IN MASSACHUSETTS: Smut (Ustilago maydis) was general with slight to severe damage in eastern Middlesex and southen Essex Counties (September 13, 15). Leaf blight (Helminthosporium turcicum) occurred in traces to very light infections generally, contrasted with the severe outbreak last year in the State. (Surveys by Robert C. Cassell, Emergency Plant Disease Prevention Project. Summarized by O. C. Boyd and Thomas Sproston, Jr., Massachusetts State College).

DELAWARE, MARYLAND, VIRGINIA, AND WEST VIRGINIA: -- Drought conditions were severe in most of this area, particularly in western Maryland and Virginia, and West Virginia east of the Alleghenies, where firing and drying-up of the leaves made determination of the presence of leaf diseases difficult. Neither bacterial wilt (Bacterium stewartii) nor Helminthosporium blight were of economic importance.

Helminthosporium blight was observed in only 2 of several hundred corn fields seen in Central and western West Virginia during the period from August 16 to 21. In one case, in Nicholas County, it affected the variety Ohio W17 where neighboring fields of Ohio 17 were free. The variety grown in the other affected field, in Mason County, could not be determined.

Smut infection was mostly less than 1% in Maryland and Delaware. Diplodia root rot (D. zeae) was extensive in 2 fields in St. Mary's County, Maryland (August 9 to 14). In a field where the corn was being husked, near Easton (Talbot County on the Eastern Shore, week ending September 25), the ears showed about 1% Fusarium ear rot (F. moniliforme) and an equal amount of dry rot (Diplodia zeae). (Summarized from reports by E. A. Walker, Maryland and Delaware; and C. F. Taylor, Virginia and West Virginia, Emergency Plant Disease Prevention Project)

KENTUCKY AND TENNESSEE: -- (August 23 to 28, 16 fields examined in central, southern, and western Tennessee). In southcentral Tennessee, potash deficiency was severe, especially in Rutherford, Maury, and Lawrence Counties where fields with 90, 100, and 92%, respectively, were seen. Another field with 52% was observed in Maury County; smaller amounts occurred in 5 other affected fields. Nitrogen deficiency was also evident, but was much less severe and more scattered in occurrence, being observed in central, southern, and western Tennessee; one field with 100% was seen in Fayette County but affected plants ranged from 3 to 16% in the other 6 fields where it was present. In the drier southwestern part of the State a leaf margin necrosis was seen which may have been due to the drought since it did not affect the entire plant, nor the tips of the leaves so much as the outer margins; from 24 to 39% was observed in 3 fields. Bacterial wilt ranging from 4 to 27% was observed in 4 fields in southwestern Tennessee. From 4 to 16% leaf streaking due either to this disease or Helminthosporium blight or a mixture of both occurred in 4 of the fields examined in the southern and southwestern parts of the State, while 20 and 24% of Helminthosporium blight was observed in a field in Knox and one in Bledsoe County, respectively.

(August 30 to September 3, southwestern Kentucky and along the Ohio

River to Louisville, then over to Lexington) -- Severe drought conditions were encountered until Louisville was reached, where a current rainfall occurred. Much firing of the leaves of the corn plants, apparently due to drought injury, was seen. In the 9 fields examined disease incidence was as follows:

In Fulton County (extreme southwest), in one field, there was 75% bacterial leaf blight (Bacterium stewartii) with an estimated 10% of the leaf area affected, and 3 % rust (Puccinia sorghi); in another field, of the Golden Prolific variety, 42% bacterial leaf blight on 5 to 10% of the leaf area, and 3% smut. In Livingston County, incidence of the bacterial leaf blight was similar on all of the 12 DeKalb varieties in one field, where 10 to 20% of the leaf area was affected; on U.S. Hybrid 13 in another field, there was 76% bacterial leaf blight with from 10 to 15% of the leaf area killed, and 28% mild Helminthosporium leaf blight of the small spot type. In a field of U.S. Hybrid 13 in Union County (west) bacterial leaf blight affected 5% of the leaf area on 40% of the plants, and there was a small amount of Helminthosporium leaf blight. Bacterial leaf blight was evident on 10% of the leaf area of 83% of the plants in a field of U.S. Hybrid 13 in Henderson County (west), and 5 to 10% of the leaf area of 75% of the plants in an Indiana Hybrid 13 field in the same county; on 5 to 10% of the leaf surface of 62% of the plants of DeKalb Hybrid 816 in a Meade County (northcentral) field; and to the extent of a trace on open-pollinated yellow corn in a field in Franklin County (north).

(September 8 to 11, eastern Kentucky and Tennessee from Knoxville to Hazard).

Diseases found were principally bacterial blight and Cercospora leaf spot, reported below under "New Records." Ear rots were negligible excepting where Fusarium moniliforme followed corn ear worm damage at the tip of the ears. In one Knox County, Tennessee, field 25% of the ears showed F. moniliforme following ear worm damage, and 4% smut.

(September 21 to 25) -- Small amounts of bacterial leaf blight and Helminthosporium leaf spot were found in Robertson County, northern Tennessee, and Christian County, western Kentucky.

(September 27 to October 1, southcentral Kentucky and eastern Tennessee) -- Fusarium moniliforme ear rot following ear worm injury, and 3% of smut on the stalks, were seen in a field in Warren County, Kentucky. Helminthosporium leaf spot and bacterial leaf blight caused the death of about 5% of the leaf area in a field in Cumberland County, Kentucky, and one in Pickett County, Tennessee. Cercospora leaf spot, Helminthosporium leaf spot, and bacterial leaf blight killed about 5 to 15% of the leaf area in a Putnam County, Tennessee, field, and a slight amount of Fusarium moniliforme following corn ear worm injury was observed on the ears. The small Helminthosporium leaf spot on 5% of the leaf area, and a slight amount of rust, were observed in a McMinn County field.

(October 4 to 9) -- At Knoxville, Tennessee, ear rots were checked on 7 varieties of open-pollinated corn, from as many States, planted on three dates, with and without Semesan, Jr. seed treatment. Each ear was checked on 4 replicates, a total of 168 rows of about 25 ears per row. The

percentage of Diplodia ear rot is listed in the table below. (Several specimens examined were Diplodia zeae.) Fusarium moniliforme frequently followed worm injury but the injury was slight. Other ear troubles were rare.

Variety	Source	Diplodia ear rot percent
Jarvis Golden Prolific	North Carolina	0.7
Delta Prolific	Arkansas	0.9
Mosby	Mississippi	1.5
Unknown	South Carolina	2.5
Neal Paymaster	Tennessee	3.7
Hays Golden	Oklahoma	4.8
Unknown	Virginia	8.4

Planting date	Diplodia ear rot percent
April 16	5.2
April 29	3.5
May 20	1.0

Seed Treatment	Diplodia ear rot percent
Untreated	3.4
Semesan, Jr., 1 1/2 oz./bu	3.1

(R. A. Hyre, Emergency Plant Disease Prevention Project)

FLORIDA: -- (July 25 to August 31) -- Field corn was so far advanced that all plantings but one late one seen at the North Florida Station at Quincy had dried up quite some time ago. In the field at Quincy, which also had passed the mature stage, the leaves were generally and rather heavily infected by rust. Late plantings of corn in this section are said to be very subject to this disease. Some evidence of ear rot diseases was also apparent in this field. However, in spite of these diseases, the yield was estimated at about 40 bushels per acre. This yield was obtained by fertilizing and presents a strong contrast to the low yields of from 10 to 15 bushels per acre characteristic of many plantings in northern Florida east of Quincy, where the general practice seems to be to use little or no fertilizer.

(September 1 to 25) -- A single late planting in the Jay section of Santa Rosa County exhibited an unusually heavy infection by rust, the leaves on practically all of the large number of plants examined being more or less severely attacked. The disease did not appear to be affecting the yield seriously, although it might have done so had a period

of drought occurred as the ears were maturing. (Arthur S. Rhoads, Emergency Plant Disease Prevention Project)

OKLAHOMA: Corn smut was found in all plantings observed, totalling 2200 to 2500 acres. Smut was less severe in the territory covered during this period than it was in the regions surveyed in August. The amount of smut varied from 1 to 5%. In a late planting near Washington at least 5% loss was attributable to smut.

Ear rots were found in all fields examined. Loss from Diplodia was found to be nearly 2% in the Hugo, Purcell, Washington, and Pauls Valley regions. Fusarium was causing approximately the same amount of loss as Diplodia in all fields, except at Washington where the loss was 3%. Only a few ears were found with typical symptoms of Gibberella [zeae] infection.

Rust was negligible in plantings where it was observed. (Howard W. Larsh, Emergency Plant Disease Prevention Project, September 3 to 12)

ARKANSAS: -- (2600 to 2700 acres observed) -- Corn fields were examined in nearly every county surveyed during this trip. An extensive survey was made to determine whether or not bacterial wilt is present on field corn in Arkansas, as it has been reported or suggested to be, several times.

Smut was general in each planting examined. Injury varied little from one planting to another, the loss usually being approximately 1 to 5%.

Brown spot (Physoderma zeae-maydis), like smut, was found to some degree in each planting. Fields near Texarkana in extreme southwestern Arkansas (Miller County), Montrose in the southeast (Ashley County), and Ozark in the northwestern part (Franklin County), all contained considerable brown spot. It is difficult to express damage from this disease in percentages. A conservative estimate in the 3 regions mentioned would be less than 5%. In other plantings damage varied from 1 to 3%.

Corn ear rots were found in all plantings. A loss of 2 or 3% was caused by Diplodia in nearly all fields observed, especially near Marianna and Clarkedale in eastern Arkansas. Fusarium ear rot was found more plentifully in plantings on the cotton substation at Clarkedale and in a field just east of Clarkedale. Gibberella ear rot was causing a damage of nearly 3% at Clarkedale.

Rust was not causing much damage. In the vicinity of Bentonville and Gravette rust pustules were more abundant than in any other region observed, but damage was light even here, and the loss due to rust would be less than 1%.

A leaf spot found quite frequently throughout the State, although causing little damage, resembles the Helminthosporium leaf spot. The spores, however, do not correspond very well with those of Helminthosporium spp. reported on corn, possibly because of immaturity or irregular development due to adverse weather conditions, and further observations will be necessary to determine the fungus involved. This leaf spot was more prevalent in plantings at Pangburn (White County, central) and Ozark than elsewhere. In the Ozark region the damage is possibly as high as 2%.

Bacterial wilt (Bacterium stewartii) was observed at Pangburn, causing damage of not more than 1%. Characteristic infections were found in 4 or

5 spots in one field. The insect vector was present in large numbers.

Most of the damage to corn in this region and adjoining counties in central Arkansas is due to a root or crown injury that either suppresses the production of the adventitious roots, or causes them to curl up and thus prevents them from penetrating the soil. Affected plants are vulnerable to strong winds, and many of the plants were prostrate in fields observed in this region. The causal organism was not determined; a further study is being made. The condition may be due either to Pythium or to a latent effect of bacterial wilt. The symptoms do not suggest Diplodia infection; however, this fungus may be the cause. (Howard W. Larsh, Emergency Plant Disease Prevention Project. August 21 to 31)

OHIO: -- (August 30 to September 4) -- Fields in northwestern Ohio were generally green and growing vigorously with a minimum of disease showing. Southwestern Ohio had been dry and here the corn fields were mature or nearly so. Leaf spot (Helminthosporium turcicum) was doing considerable damage in isolated fields. Some hybrid strains seemed to be more susceptible than others. Damage affecting 25% of the leaves was noted in several fields. What appears to be the beginning of stalk rots was showing up in some of the more mature fields. Some farmers were beginning to cut corn.

(October 4 to 9) -- For the past few weeks data have been collected in various parts of Ohio on corn diseases. By far the most common was the Helminthosporium leaf spot (H. turcicum). Data were taken on a total of 51 fields: 19 were free from the disease; a trace was found in 14; 7 had lost as much as 10% of the leaf surface and 7 more had lost 25%; 4 were so severely affected that more than 50% of the leaf surface was damaged. As a rule the disease became active so late in the season that it was of little economic importance. It was most prevalent on early-maturing fields in southern Ohio. To the north it became increasingly less destructive and on late corn in northeastern Ohio it was difficult to find. Some hybrid strains appear to be more susceptible than others. (M. R. Harris, Emergency Plant Disease Prevention Project)

INDIANA: Corn in northwestern Indiana during the week ending August 28 appeared to be affected little with disease. Two fields in the vicinity of Medaryville and one near Chalmers were severely attacked by leaf blight (Helminthosporium turcicum). In the fields near Medaryville the effective leaf area was reduced about 10%, in the field near Chalmers about 5%.

During the period from September 16 to 18, a survey was made in the southeastern section of Indiana in the company of Dr. A. J. Ullstrup. Corn in this section was maturing rapidly and leaf blight (Helminthosporium turcicum) and Diplodia stalk rot (Diplodia zeae) appeared to be on the increase in practically all of the fields. It is estimated that approximately 25% of the fields seen were affected severely by Helminthosporium, 50% moderately, and 25% slightly. Around Anderson, New Castle, and Rushville, approximately half of the fields were affected severely. Severely affected fields had 30 to 90% of the foliage killed, moderately 15 to 30%, and slightly less than 15%. The grain on many of the severely affected plants was immature, but had dented, and showed signs of becoming light and chaffy when matured and dried.

All of the corn showed a trace to slight bacterial leaf blight (Bacterium stewartii). However, in most of the fields leaf blight (Helminthosporium) was more severe than the bacterial blight.

In 3 fields near Madison and 1 near Seymour a trace to slight infection of Physoderma zeae-maydis (brown spot) occurred on the leaves. However, this disease appeared to be causing little or not injury.

A trace of smut and rust were found in a few fields, but the injury resulting from these 2 diseases is of little importance this year.

From September 21 to 24 a survey was made in Tippecanoe County in the vicinity of Lafayette and in central and western Indiana. Corn was maturing rapidly and in most fields some Diplodia stalk rot was evident. Of 47 fields examined 23% appeared free or contained a trace; 40% contained 1 up to 5%; 26% contained 5 to 15% affected stalks; and 11% contained 15 to 30% diseased stalks.

Most of the fields examined had a trace to slight bacterial leaf blight and leaf blight caused by Helminthosporium turcicum.

During the period from September 27 to October 2 crops were inspected in northeastern Indiana. In the area east of Lafayette to Kokomo and Gas City most corn fields were affected slightly by Helminthosporium turcicum and Bacterium stewartii leaf blights. In this area corn was nearly mature and in many fields from 3 to 5% of the stalks were infected with Diplodia zeae. In a few fields between 30 to 50% of the plants were affected with stalk rot.

In the northern area of the State around Fort Wayne, Goshen, and Nappanee much of the corn was still green and exceptionally free from disease. In some of the low areas the leaves had been partially killed by low temperatures.

A trace of rust and of smut was found in 5 of 15 fields examined. (R. C. Baines, Emergency Plant Disease Prevention Project)

ILLINOIS: On August 30 and 31, a survey was made of the diseases occurring on corn and soybeans across central Illinois from Urbana to Lincoln, Springfield, Beardstown, Rushville, Jacksonville, Waverly, Taylorsville, and Decatur. This survey was conducted with the assistance of Doctors Benjamin Koehler and Wm. B. Allington. Corn in this area was nearing maturity; however, the grain was still soft. Fields exhibiting a premature dying of the corn plants or leaf blight were examined. Ten fields were affected severely by bacterial leaf blight (Bacterium stewartii); between 10 and 30% of the leaf area was blighted.

In a few fields between 1 and 30% of the stalks were rotted near the soil by Diplodia zeae. Very likely the grain from infected plants will be chaffy and lightweight owing to premature killing of the stalks.

During the period from September 6 to 10 a survey was made in northern Illinois, in company with Dr. M. B. Linn. In a field near DeKalb grown for the production of Golden Cross Bantam sweet corn seed, approximately 25% of the stalks of the inbred Purdue #39 were affected with stalk rot (Diplodia zeae). A Fusarium ear rot appeared to be fairly abundant on the inbred Purdue #39.

The stalks of a Bantam inbred sweet corn in a field near De Kalb were affected with a disease of undetermined cause. The nodes were dark in color and the stem separated at the notes when pulled. Frequently the base of the plant was rotted. Diseased plants matured early and the seed

was light in weight. (R. C. Baines, Emergency Plant Disease Prevention Project)

MICHIGAN: -- (August 23 to 28) -- Corn fields were surveyed in the Ypsilanti area, along the highway from Detroit to Lansing, and in the Ann Arbor area. Fields ranged in maturity from late silking to nearly mature. Very little disease of any kind was found. Two fields showed secondary fungus infection of the leaves following extensive corn borer damage.

Sweet corn in the Detroit market garden area has been very little damaged by bacterial wilt (Bacterium stewartii) this year.

(September 13 to 18) -- Frost damaged corn over the State generally except in the extreme southern counties. It is estimated that only 25% of the fields were green enough to produce "soft" corn. Leaves in fields around Flint were severely damaged by hail earlier in the season and were attacked by semi-saprophytic fungi that caused a considerable loss of leaf surface. (M. R. Harris, Emergency Plant Disease Prevention Project)

STALK ROT IN MINNESOTA: During the week ending September 18, a survey was made in 13 southeastern counties, principally to determine the severity of stalk rot [cause not specified; ? Diplodia zeae] of corn.

Between St. Paul and Waseca, attack by stalk rot ranged from 0.5 to 22% with an average of 8%. In the neighborhood of Waseca a few fields were heavily attacked, almost all plants showing definite symptoms. From Waseca to Albert Lea to near Dexter in Mower County the average infection was about 6%, ranging from a trace to 20%. However, eastward in Mower County toward Spring Valley, most fields were very heavily attacked, the disease being more severe in this section than in any other inspected in southeastern Minnesota. The average amount for fields between Dexter and the eastern boundary of Mower County was not less than 35%. One mile east of this heavily affected area, corn was relatively free from stalk rot, in one field only one affected plant being found in several hundred plants, while no field between Spring Valley and Preston had more than 2% stalk rot. It is not possible to state definitely the reason for the great change in severity of stalk rot but it is possible that part of the difference resulted from the use of different hybrid lines and part from ecological factors. From Preston to Winona, one field of corn with 20% stalk rot was seen; however most fields ranged from a trace to 2%, the average being about 1%. Fields between Winona, Rochester, Faribault to St. Paul varied from a trace to a maximum of 25% of the plants affected, and there were no areas where stalk rot was generally very severe.

The average infection for stalk rot in the 13 southeastern counties will approximate 10%. (Ian W. Tervet, Emergency Plant Disease Prevention Project)

IOWA: On September 14, 15, and 16, in company with Dr. George Semeniuk of the Iowa Agricultural Experiment Station, corn and soybean fields in the western portion of Iowa were surveyed for the incidence of disease. Observations were made in Boone, Webster, Humboldt, Kossuth, Palo Alto, Clay, O'Brien, Cherokee, Crawford, Shelby, Adams, Union, Cass, Montgomery, Warren, and Polk Counties. All corn fields showed some ears with shucks

dry and prematurely dead. From 3 to 33% of the ears in the fields examined were so affected, the average for the entire area being 16%. Smut was prevalent, ranging from a trace to 14% of the plants in individual fields affected, averaging 3%. The majority of the smut galls were located at the lower nodes or on secondary shoots; 1% of the ears were involved. From none to 33% of the plants in individual fields were either dead or dying as the result of Diplodia zeae infection at the nodes or roots, with an overall average of 7% for all fields observed. Secondary ears showed a high percentage of Basisporium gallarum [Nigrospora oryzae] decay, ranging from 65 to 100%, averaging 91%. One-third of the fields showed a trace of leaf rust infection. A trace of Fusarium moniliforme ear rot was noted in one field; in another a trace of Gibberella zeae ear infection. Two fields in Cherokee County were observed in which practically all the plants were dead or dying and 50% of the stalks were down. Diplodia stalk infection was prevalent, but in local areas in both fields 33% of the dead stalks showed the presence of charcoal rot (Sclerotium bataticola). Both fields were characterized by light sandy soil and a relatively high elevation.

During the week of September 20 to 25 inclusive, a survey trip was made from Ames to the eastern boundary of the State in the vicinity of Clinton, then south along the Mississippi River. The degree of maturity of the corn was variable, ranging from a few late planted fields in which the plants were green and in which there was no evidence of drying, to fields that were mature, showing 98% of the ears with shucks dead and the plants drying. For all fields examined, 32% of the ears showed the shucks dead and dry. Prematurely dead plants were found in 2/3 of the fields, averaging 6% of the stand. Practically all such plants showed Diplodia zeae infection of the lower nodes or roots. Three-tenths of one percent of the ears showed unmistakable signs of Diplodia infection. One field was observed in Clinton County, on light, sandy soil, in which all plants were prematurely dead, about 1/3 of these lodged, and 80% of the plants showing Diplodia zeae infection. The ears were light and chaffy. Smut was prevalent in all fields, ranging from a trace to 16%, averaging 5%. Two percent of the plants showed smut infection at the nodes, 1% infection of the ears, 1% tassel infection and 0.5% sucker infection. Ninety-five percent of the secondary ears showed symptoms of Nigrospora decay. A trace of Gibberella zeae and Fusarium moniliforme ear rots was noted, and a trace of leaf rust was general throughout the area visited.

During the week ending October 9, a survey of corn was made, particularly for the prevalence of stalk and ear rots, in Story County in central Iowa. The corn, in general, was mature. All fields showed a high percentage of the stalks showing Diplodia zeae infection at the lower nodes and roots, ranging from 33 to 55%, averaging 43%. Symptoms of Diplodia infection of the shanks were evident in 4% of the plants, ranging from none to as much as 14% in the individual fields. Smut-infected plants appeared to be more prevalent in this area than in the other areas surveyed previously, ranging from a trace to 19%, averaging 8%. Infection seemed to be about equally distributed between nodes and ears, with a small percentage of tassel infection. Nigrospora decay was noted in practically all secondary ears and in 2% of the primary ears. Less than 1% of the ears showed Fusarium moniliforme ear rot. A trace of leaf rust was observed. (T. W. Bretz, Emergency Plant Disease Prevention Project)

MISSOURI: During the week from September 20 to 25, the survey trip was continued from Iowa south along the Mississippi River to the vicinity of St. Louis, and up the Missouri River Valley to Columbia. The corn fields were classified either as mature (located on the higher ground) or as green and immature (late planted fields situated in the river bottoms). The mature fields showed the ears with shucks dry and dead and the plants dry or drying rapidly, Diplodia zeae infection of the lower nodes or roots of the plants in such fields was general, ranging from 8 to 50%, averaging 31%. A trace of typical Diplodia ear rot was noted. Smut was found in all fields, ranging from a trace to 12%. On an average, 2% ear infection, 2% tassel infection, and 1% node infection was observed. Of the secondary ears, 95% showed typical Nigrospora rot symptoms. A trace of Gibberella zeae, Fusarium moniliforme, and Nigrospora infection of primary ears was noted. In the late planted, immature fields, there was a general absence of premature killing of plants due to stalk rots, although in about 1/3 of the fields from 1 to 33% of the plants were in a prostrate or semi-prostrate position. Such plants showed very poorly developed root systems and a disintegration of many of the prop=roots. Only a trace of Diplodia zeae infection of the lower nodes and roots was noted and 0.5% premature drying of ears was noted. One percent of the plants showed smut infection, most of the smut galls being situated in the tassels. Four percent of the secondary ears showed symptoms of Nigrospora ear rot. A trace of leaf rust was noted in almost all fields.

Corn and soybeans were the principal crops surveyed during the week ending October 2. The Missouri River was followed from Columbia to the northwestern corner of the State. Late planted corn, on bottom lands, was immature and green. In general, there was little evidence of premature dying, although in one field 6% of the plants showed Diplodia zeae infection at the lower nodes and roots. For all late-planted fields examined, a trace of Diplodia zeae, a trace of smut, and a trace of bacterial stalk rot (Phytomonas dissolvens) infection was noted. The latter was observed in about 1/3 of the fields. Leaf rust was general in 50% of the fields, but was responsible for only a trace of damage. In all fields, 3 to 5% of the plants were in a prostrate or semi-prostrate position owing to the disintegration of the prop roots.

In the early-planted fields, the plants in general were mature. In all fields a high percentage of the plants showed signs of Diplodia zeae infection. The range was from 18 to 70%, with a general average of 38% of the plants affected. Most of the infection was at the lower nodes and roots. From 2 to 16%, average 7%, of shank infection was noted. Smut infection was noted in all fields, ranging from a trace to 6%, averaging 2.5%. Infection of ears, nodes, tassels and suckers seemed to be about equally distributed. From 25 to 95% of the secondary ears showed evidence of Nigrospora infection, averaging 43%. Practically all ears showed corn ear worm damage, followed by infection with species of Fusarium and Penicillium. (T. W. Bretz, Emergency Plant Disease Prevention Project)

DISEASES OF SORGHUM

FLORIDA: -- Zonate spot (Gloeocercospora sorghi) was the principal disease of sorghum noted in plantings examined at a number of points during August. It was rather widespread in one planting of Texas Seeded Ribbon [at Quincy] where it was causing extensive blotching and dying of the leaves. An unidentified disease consisting of small blackish spots so numerous as to blacken entire leaves also occurred extensively on other plants in the same planting but no spore formation was apparent. A trace of Asochyta sorghina was noted also. Zonate spot was found to be of widespread occurrence in a planting near Perry in Taylor County. It was not observed in the variety test plantings at Gainesville.

In Sorghum test plots at Gainesville seed formation was greatly curtailed on some varieties by the development of Fusarium and a miscellaneous array of saprophytic fungi that commonly attack the heads during the warm humid rainy season of late summer. Such a combination of conditions is ideal for the development of fungi and constitutes an important factor in seed production of crops maturing during this period.

During September further examination was made of the planting of the Texas Seeded Ribbon variety near Perry where Gloeocercospora sorghi was was found to be prevalent on the previous trip. Anthracnose (Colletotrichum lineola) was fruiting extensively on the midribs and older infected, blackened areas on the leaf blades, the disease being of widespread occurrence and causing premature dying of a large percentage of the leaves in places. Ascochyta sorghina was also found but only on occasional leaves of a small percentage of plants.

The planting of the same variety of sorghum at the North Florida Experiment Station at Quincy was again visited. No increase in the development of Gloeocercospora sorghi was noted over the previous visit but anthracnose (Colletotrichum lineola) was developing abundantly and resulting in premature death of the leaves of about 5% of the plants. Ascochyta sorghina was found to occur on leaves of occasional plants as before.

Rust (Puccinia purpurea) was found in but one of several plantings examined. On a farm near Oak Grove, Escambia County, it was observed on the leaves of about 25% of the plants (variety unknown) in the small portion of the field that still remained unstripped.

Leaf spot (Cercospora sorghi) was found to be of general occurrence in a planting of an unknown variety a few miles east of Tallahassee, occurring not only on the older plants but also on an adjoining late planting and resulting in a high percentage of leaf loss. (Arthur S. Rhoads, Emergency Plant Disease Prevention Project)

MISSISSIPPI: -- (August 29 to September 4) -- At the Meridian Sorghum and Cane Experiment Station the following leaf spot diseases were found: Ascochyta sorghina, Colletotrichum graminicolum, Cercospora sorghi, and Titaeospora andropogonis. A trace of Gloeocercospora sorghi was found.

In 2 fields of 3 acres and 2 acres each near Lumberton, Colletotrichum graminicolum was heavy on all leaves, the lower leaves all being dead. A trace of Gloeocercospora sorghi leaf spot was found.

(September 27 to October 2) -- Fields of sorghum were examined in

Oktibbeha, Choctaw, Webster, Winston, Chickasaw, Pontotoc, Monroe, Clay, Neshoba, Attala, and Madison Counties. The most prevalent disease found throughout the area was the Ascochyta sorghina leaf spot. In the vicinity of Starkville, in 2 fields of 15 to 20 acres each, infection was very heavy, over 50% of the leaf area of the fields being affected. In 2 fields Cercospora leaf spot was the most prevalent disease. Colletotrichum graminicolum was found in most fields, infection ranging from light to heavy. Zonate leaf spot (Gloeocercospora sorghi) was found in traces in only 3 fields. (L. H. Person, Emergency Plant Disease Prevention Project)

LOUISIANA: -- (August 23 to 28) -- Several fields of sorghum were visited in the rice area of southwestern Louisiana. In one field Gloeocercospora sorghi had attacked all the leaves and most of the lower leaves were dead. Traces of Colletotrichum graminicolum were found.

(September 6 to 11) -- The most prevalent diseases observed on sorghum in St. Landry Parish were zonate leaf spot and rust (Puccinia purpurea) which were present on most of the leaves. Anthracnose (Colletotrichum graminicolum) was also found but it was not abundant. Bacterial stripe (Pseudomonas andropogoni) was observed in one field. (L. H. Person, Emergency Plant Disease Prevention Project)

TEXAS: -- Bacterial stripe occurred rather generally on susceptible varieties of grain sorghums in the Gulf Coast plains. Especially severe attacks were seen in fields in Matagorda and Jackson Counties. In these cases the forage value of the crop was markedly reduced. (G. M. Watkins, Emergency Plant Disease Prevention Project, Week ending September 11)

OKLAHOMA: (September 3 to 12) -- The most common and prevalent diseases in all the sorghum plantings observed were the bacterial diseases, bacterial spot (Pseudomonas holci), bacterial stripe (P. andropogoni), and bacterial streak (Xanthomonas holcicola); however, the loss due to them should probably be estimated at less than 2%. Bacterial spot was the most prevalent of the 3 bacterial diseases. A Sudangrass X milo hybrid on the Woodward station suffered extremely severe damage amounting to 60 to 80%.

Charcoal rot (Sclerotium bataticola) was very evident in the plantings at Perkins (Payne County, northcentral). In western Oklahoma at this time the disease was just beginning to appear in many plantings.

Most of the injury to sorghum in western Oklahoma, in the areas of Enid, Cherokee, Alva, Buffalo, and Woodward, could be attributed to hot weather.

Milo disease (Pythium arrhenomanes) was found on the Woodward Station on most of the plants in each nursery planting of the Wheatland, Wheatland x Standard Dwarf, and Sooner Milo varieties. It was also observed in a field east of Geary, between Geary and Calumet in Canadian County, where it was causing 15% loss.

Charcoal rot and bacterial disease occurred in plantings of broom corn at the Woodward Station and in the vicinity of Purcell (McClain County).

(September 13 to 19) -- Sorghum plantings were observed in several counties in central and southcentral Oklahoma. Only the bacterial diseases were observed, except for charcoal rot which was causing 1% loss in a 20-acre field north of Holdenville, milo disease in a 40-acre bottom-

land planting north of Wetumka where the loss was 10%. (Howard W. Larsh, Emergency Plant Disease Prevention Project)

KANSAS: -- In a 2-week trip through the sounties in the western half of Kansas, a survey was made of the milo group of sorghums and the following diseases were observed.

Because of drought conditions and the growing of varieties resistant to milo disease, particularly Westland, it was difficult to find milo disease (Pythium arrhenomanes). In 12 fields (7%) in the southwest counties, unmistakable evidence of the disease was found, the plants having been killed at an early stage. In 20 other fields the plants showing symptoms were already headed; in such cases positive identification is possible only through testing of soil samples in the greenhouse. A total of 52 soil samples from 37 counties was collected. These will be tested during November and December and a detailed report of the distribution of this disease will be made at a later date.

Charcoal rot (Sclerotium bataticola) was present in 47 fields (28%) with damage ranging from a trace to almost 100% in localized areas in some fields. Lodging, up to 50%, is already becoming evident in some fields. The presence of this disease in 20 counties indicates that the loss from this disease will be very high. All varieties appear to be about equally susceptible.

In 21 fields (12%) some plants were prematurely dead with orange-colored foliage and shredded, disorganized tissues in the stalk, sometimes with reddish discolorations, in a few cases extending down into the tip of the crown. Most of these cases suggest the presence of charcoal rot before sclerotia are formed. Milo disease might possibly be present also, and soil samples were taken in order to eliminate this possibility.

Kernel smut (Sphacelotheca sorghi) was found in 26 fields (15%), the amount varying from a trace to 18%. The presence of smut in milo fields, which appears to be physiologic race 2 (milo smut), is a matter of interest.

The bacterial leaf spots were not prominent, owing to drought and early maturing of some fields, and appear to be causing little damage. Bacterial streak (Xanthomonas holcicola) was found in 15 fields (9%) and bacterial stripe (Pseudomonas andropogoni) in 2 fields (1%). Weak neck (non-parasitic) was present in 50 fields. (Stuart M. Pady, Emergency Plant Disease Prevention Project. September 20 to October 1)

REPORTS ON RICE DISEASES

FLORIDA: -- A Helminthosporium-like eye-spot was of general occurrence in an unusually fine planting of upland rice at Perry (Taylor County), observed in September. What appeared to be the same disease was of widespread occurrence on spreading witch-grass or fall Panicum (Panicum dichotomiflorum) that was growing abundantly adjoining the rice field and occurring scattered throughout the rice field. The fungus was not fruiting in the material collected on either host. Large numbers of hemipterous insects were present on the rice heads and some browning of the grains that was noted was thought to be due to the insects. (Arthur S. Rhoads, Emergency Plant Disease Prevention Project)

LOUISIANA: -- During the week of August 23 to 28, a trip was made through the rice-growing section of Louisiana in Acadia, Vermillion, Jefferson Davis, and Calcasieu Parishes.

In general, the rice crop was in reasonably good condition. Nearly all the Early Prolific rice had been cut and was being threshed. One field, however, was found that had not been cut. Fields of Blue Rose, Fortuna, Rexora, and Nira were visited.

The most prevalent disease of Blue Rose was the leaf spot caused by Cercospora oryzae. This disease was also plentiful in the field of Early Prolific visited and was found on all plants. The other varieties were free of this disease. Helminthosporium oryzae was found in all fields visited, but was not severe and apparently was causing little damage. Entyloma oryzae was also present on all varieties but appeared to be more severe on Nira than on other varieties. Rhizoctonia sheath spot and the banded sclerotial disease caused by Hypochnus sasakii were present in several fields; however, little damage seemed to be caused by these diseases. One field of 120 acres of Blue Rose rice was found to be seriously attacked by the blast fungus, Piricularia oryzae. The plants were recovering but at the time of observation were much smaller than they should have been and yields will probably be much reduced in this field. (L. H. Person, Emergency Plant Disease Prevention Project)

TEXAS: -- September 20 to 24 was spent studying rice diseases in the Gulf Coast area from the Sabine River southwest to Wharton and Colorado Counties. All the important rice sections of the State were visited. The first 2 days I was accompanied by Dr. E. C. Tullis and Mr. H. M. Beachell, both of the U. S. Bureau of Plant Industry, and later by Dr. Noe Higinbotham of the Texas Agricultural Experiment Station.

The usual foliage diseases encountered in every field examined were brown spot (Helminthosporium oryzae) and leaf smut (Entyloma oryzae). Cercospora leaf spot (Cercospora oryzae) occurred in about half the fields seen in Orange, Jefferson, Liberty, and Chambers Counties. In the western half of the Texas rice belt (that part lying west of Houston) Cercospora leaf spot was encountered much less frequently. Occasional plants were seen with foliage symptoms of blast (Piricularia oryzae), but the "rotten neck" phase of the disease was not found. Blast was not an important disease in any part of the rice belt.

Injury to florets from Helminthosporium oryzae was common in all fields in the eastern part of the rice section and was observed to a somewhat less extent west of Houston.

In a few fields in Orange County straighthead (probably physiological) was present to a serious degree, indicating the failure of the florets to mature normal kernels.

Only a trace of white tip (physiological) was found in one field in Liberty County.

Dr. Tullis found a specimen of bordered sheath rot (Rhizoctonia sp.) in a field in Orange County. No other cases were seen.

Estimates of the extent to which the ubiquitous Helminthosporium oryzae and Entyloma oryzae damage the crop are difficult for one not familar with rice culture to make. In some of the worst fields I considered that 50 to 80% of the total leaf area was incapacitated by H. oryzae. If this is true, the yield is no doubt seriously decreased. Fortunately Entyloma

oryzae is usually most abundant on older basal leaves. Some varietal differences in susceptibility to foliage diseases occur. Rexoro, a variety which seems to be in the ascendency now, appears to suffer less than others from Helminthosporium and Cercospora. (G. M. Watkins, Emergency Plant Disease Prevention Project)

ARKANSAS: -- About 3200 acres of rice plantings were observed. -- Blast (Piriculori oryzae) was found in new plantings at Hamburg in southeastern Arkansas and McCrory (Woodruff County) in the eastcentral part of the State, the loss in these regions being nearly 20%.

Helminthosporium leaf spot (H. oryzae = Ophiobolus miyabeanus) was fairly common in most fields observed. In plantings in St. Francis County and at Hamburg, losses of 3% were not uncommon. In the region from Wynne to McCrory a moderate infection resulted in a loss estimated at 5%.

Cercospora leaf spot (C. oryzae) was more prevalent in areas where the Helminthosporium leaf spot was also present. Heaviest infection was observed in fields of one grower at McCrory.

Entyloma oryzae (black leaf smut) was prevalent enough to warrant an estimate of damage only in the region between Wynne and McCrory, where infection was severe and the loss was 1%.

Stem rot (Leptosphaeria salvinii) occurred but caused negligible damage in 1 or 2 plantings near Stuttgart.

Sun scald was observed in 2 plantings in Monroe County causing nearly 50% loss in one 60-acre field, and 12% loss in another field of almost 170 acres.

Straighthead (non-parasitic) was moderate in the McCrory region. (Howard W. Larsh, Emergency Plant Disease Prevention Project. August 21 to 31)

DISEASES OF COTTON

SOUTH CAROLINA: -- In the company of Dr. Richard Weindling of the Division of Cotton and Other Crops and Diseases a quick trip was taken to Hartsville. There we consulted with Dr. C. S. Rogers of the Coker Seed Company, and spent half a day visiting the test farms.

At this season of the year it is very difficult to be certain about separating cotton wilt (Fusarium vasinfectum) from potash deficiency symptoms.

In a few low lying fields Ramularia areola (frosty mildew) was found on many of the older leaves.

Only one field was observed where angular leaf spot (Xanthomonas malvacearum) was causing or accompanied heavy defoliation. In this field most leaves had a veinal type of infection involving the main vein at the top of the petiole.

In only one field was a boll rot observed that was definitely not part of the boll weevil complex. These bolls were rotted at the tip (about 1%) where the blossom had adhered and rotted, thus transmitting the rot to the boll.

In many fields with 10% of the leaf surface affected with angular leaf spot bolls could be found with typical angular leaf spot lesions. Occasional bolls with anthracnose lesions (not typical) were observed in

rank fields.

Around 2% of the bolls were damaged by boll weevil but only about 10% were rotted. (R. E. Atkinson, Emergency Plant Disease Prevention Project)

GEORGIA: The cotton crop in the Augusta area visited September 27 to October 2 appeared to be in good condition with little disease in evidence. Angular leaf spot was found in every field examined with no apparent damage. One field was observed with from 5 to 10% of the plants wilted by Fusarium wilt, and 2 others with comparatively small wilted "spots". (G. M. Stone, Emergency Plant Disease Prevention Project)

FLORIDA: In August a 5-acre planting of cotton at Madison was found to have suffered about 25% loss of plants, which were said to have kept dying gradually from the seedling stage to approximate maturity. A general dying of the nearly mature plants occurred throughout the field, occasionally being concentrated in small local areas. The disease attacked the roots and bases of the plants, causing discoloration of the vascular tissues, though no evidence of wilt was apparent. The majority of the more recently dead plants examined were found to contain sclerotia of Sclerotium bataticola under the bark, and others showed evidence of Diplodia natalensis. According to the county agricultural agent, plantings of cotton throughout Madison County usually suffer a similar loss of from 25 to 30%.

In September one field 10 miles east of Tallahassee, in which the plants were about mature and had lost most of the foliage, was found to contain a large number of dead plants characterized by the occurrence of abundant, minute, dark sclerotia of S. bataticola between the bark and the wood, and by discoloration of the stems, on which Diplodia gossypina (Physalospora rhodina) fruited after collecting. Boll rot, due to the latter fungus, was found to be of general occurrence in cotton fields near Marianna (Jackson County), Bonifay (Holmes County), Allentown (Santa Rosa County), and Oak Grove and other points in Escambia County. Rust (Potash deficiency) also caused loss in some plantings at points visited in Santa Rosa and Escambia Counties but the crop was too far advanced to evaluate this properly as a factor of loss. A small amount of leaf spot collected in one field near Marianna appeared to be due to a variety of miscellaneous organisms, including Phyllosticta gossypina, and not characteristic of any one. (Arthur S. Rhoads, Emergency Plant Disease Prevention Project).

TEXAS: The weed ending September 11 was spent in the Gulf Coast plains from the Houston-Galveston area to the Corpus Christi-Alice region. Cotton root rot (Phymatotrichum omnivorum) was seen in all counties in which cotton occurred, except Wharton. The disease was especially severe in the region about Corpus Christi (Nueces, San Patricio, and Jim Wells Counties) and northeastward through Jackson and Matagorda Counties. Numerous large fields were seen in which 60 to 75% of the plants had been killed.

Angular leaf spot (Xanthomonas malvacearum) was seen in every cotton field examined, but was never serious except in one field in Austin County. No boll lesions were found.

In Hidalgo County in the lower Rio Grande Valley during the week ending October 2, one rather large cotton field was observed with a few of the

plants killed by Phymatotrichum root rot. (G. M. Watkins, Emergency Plant Disease Prevention Project)

OKLAHOMA: From September 3 to 12, an extensive survey was made in the cotton-growing counties, from 7000 to 8000 acres being observed.

Root rot (Phymatotrichum omnivorum) was found without much difficulty in the Red River Valley, where it was observed causing damage in the vicinities of Tom, Pleasant Hill, Shawneetown, and Idabel in McCurtain County in the extreme southeastern corner of the State, north of Durant, Caddo (Bryan County), Ury, Nida (Johnston County), Madill, Kinlock (Marshall County), and west of Davis (Murray County). The amount of damage varied in the different fields. In 2 fields southeast of Madill a loss of nearly 20% was estimated; however, for the entire region the loss would amount to nearly 5%.

Fusarium wilt (F. vasinfectum) was observed south of Tom where loss was estimated at 1%. It was causing 2% loss near Armstrong (Bryan County) and Ft. Towson (Choctaw County). In a single planting west of Idabel 3 or 4 plants were found that had been killed by this disease.

The severity of angular leaf spot (Xanthomonas malvacearum) depended on the occurrence of local rain. Moderate to severe infections occurred in the vicinity of Stillwater (Payne County, northcentral), Perry (Noble County, northcentral), Madill (Marshall County, south), and Purcell (McClain County, central), but in no region was there a great deal of defoliation due to this disease.

Cercospora leaf spot (Mycosphaerella gossypina) was the most widespread of all the cotton diseases in Oklahoma this season. It was not at all uncommon to find infected plants in every field. Especially severe infections, resulting in defoliation, were observed at Mannsville (Johnston County, south), Purcell, and Watonga (Blaine County, central).

A very pronounced infection with Alternaria which was causing a slight amount of defoliation, was observed in a planting north of Wynnewood (Garvin County, southcentral) and again in the Mannsville area.

In most instances, adverse weather conditions had prevented the spread of these leaf infections and only a small loss of plants resulted.

Lightning injury caused a loss of 10% in a 5-acre planting 2 miles west of Watonga.

Symptoms of potassium deficiency were noticeable in various fields between Idabel and Hugo, at Wynnewood, and east of Stillwater. The most pronounced symptoms of manganese deficiency were observed in a field northwest of Purcell, where the purpling of the upper leaf surfaces and the brittle consistency of the leaves was evident.

During the first part of the week from September 13 to 19, 4000 acres were observed in company with Dr. W. W. Ray in search for boll diseases. The following counties in central and southcentral Oklahoma were surveyed, in part, during this trip: Cleveland, McClain, Garvin, Murray, Carter, Marshall, Grady, Caddo, and Canadian.

Boll diseases were limited in distribution to certain regions and were extremely sparse in occurrence. Insect injury to the bolls was negligible; this factor, together with the extreme drought conditions prevailing, perhaps accounts for the scarcity of boll rot observed.

Although in several localities a moderate amount of bacterial boll spotting caused by the angular leaf spot organism was observed, in only 4

instances were we able to locate boll rot during this trip. In a field approximately 1-1/2 miles north of Wayne (McClain County), several bolls were found infected with Xanthomonas malvacearum causing boll rot. In 2 or 3 cases secondary organisms had become established in the primary bacterial infections. In fields 7 miles south of Madill a few bolls were found showing bacterial boll rot, with secondary organisms in a single boll. Bacterial boll infections were found in 2 other regions, south of Noble, (Cleveland County), and west of Pauls Valley (Garvin County); in neither was infection heavier than in the cases already mentioned. In each field not more than 2 or 3 affected bolls were found and no secondary infections were apparent.

In a field with black soil at Davis in Murray County, several plants were found affected with the Texas root rot organism, Phymatotrichum omnivorum. According to Dr. K. Starr Chester, of the Oklahoma Agricultural Experiment Station, this is the farthest north of the Red River that root rot has been found in the State, with the exception of an isolated island of infestation in Sayre (Beckham County, extreme west), 160 miles to the west. The Davis case appears to indicate a finger of soil infestation extending up the Washita from Gene Autry (Berwyn), the farthest point upstream that the disease had hitherto been recorded, despite search for it in the past.

During the remainder of the week an extensive survey was made in regions where Fusarium wilt had been reported prior to the survey. Approximately another 4000 acres were inspected, in the following Counties: Pottawatomie, Hughes, Seminole, Coal, McIntosh, Okmulgee, Muskogee, Cherokee, and Adair. Fusarium-wilt-affected plants were found in only 4 regions, the amount of damage varying from 2 to 15%. The most southerly point covered during this period was northern Coal County. No wilted plants were observed in the region of Non (Hughes County) 1/ and southward into northern Coal County.

In a 40-acre planting 5-1/2 miles north of Calvin (Hughes County), a loss of 5% was attributed to Fusarium wilt. The next place where wilt was found was north of Wetumka (Hughes County) in the North Canadian River Valley; in a 40-acre field a loss of nearly 15% was estimated. Two miles south of Weleetka (Okfuskee County) Fusarium wilt was causing a loss of nearly 2% in a 30-acre planting. The last wilt-affected field found in this survey was on bottom land 2 miles south of Boynton (Muskogee County), where the loss was estimated at 2%.

Plantings affected by Xanthomonas malvacearum, not previously reported specifically, were observed near Wetumka, Weleetka, Morris (Okmulgee County), and Boynton. In all of these fields angular leaf spot was less severe than in the area east of Stillwater. The lower leaves were heavily infected but defoliation was not apparent in any of the fields.

1/ A few years ago many fields in the vicinity of Non were very heavily infested with Fusarium wilt, with 30 to 100% of the plants dead by picking time. A program to encourage the use of wilt-resistant varieties was enthusiastically received by the growers and local ginner. This program may in large part explain the relative lack of wilt in this area at present.--K. Starr Chester, Oklahoma Agricultural Experiment Station.

Primary boll infections due to this bacterium were observed at Wetumka and Boynton, the degree of severity corresponding to that in the other regions reported. In each case leaf infection was moderate but examples of boll infections were difficult to locate.

The most widespread type of injury to cotton in Oklahoma during the current season is drought injury to the leaves associated with infection by Cercospora gossypina and Alternaria spp. It is difficult to find a field without a few plants showing signs of such trouble, and several fields were observed in which damage could be estimated as moderate to severe.

Cercospora 2/ infections were pronounced at Tecumseh, Holdenville, Atwood, Calvin, Non, Wetumka, Henryetta, Okmulgee, Morris, Boynton, Taft, and Muskogee. In the last-named 4 areas many plants had been defoliated by Cercospora; however, the bolls had matured in most instances and the actual amount of damage was difficult to determine.

Alternaria 2/ infections were located at Calvin, Wetumka, Weleetka, Beggs, Boynton, Taft, and Muskogee. In many areas the Alternaria had invaded Cercospora lesions. However, this was not the case in the fields at Wetumka, Beggs, and Boynton, where the Alternaria was primary.

Southwest of Beggs (Okmulgee County) lightning struck and destroyed a quarter-acre in one field. Examination of several plants in this area revealed sclerotia of Sclerotium bataticola. (Howard W. Larsh, Emergency Plant Disease Prevention Project)

ARKANSAS: -- An extensive survey was made of cotton during the period from August 21 to 31. From 5000 to 6000 acres were surveyed; the observations including individual inspection in certain fields, and examination of others while driving slowly past.

Angular leaf spot was the only disease found in nearly all plantings observed, the amount of infection varying considerably from one region to another. In the vicinity of Pine Bluff (Jefferson County, east central), many fields were attacked only mildly, with only a trace in some. On the other hand, in the regions of Hope, Magnolia, El Dorado, Hamburg, and McGehee (Hempstead, Columbia, Union, Ashley, and Desha Counties, respectively, in southern Arkansas from southwest to southeast), the disease was very general in distribution throughout the fields, in some instances causing defoliation.

Verticillium wilt was found near Texarkana in extreme southwestern Arkansas for the first time on this trip. In a planting about 5 miles east of Texarkana a loss of 2% could be attributed to this disease. A trace was found in the vicinity of Hughes in eastern Arkansas (St. Francis County). Two percent loss occurred in plantings near Bassett and Keiser in the northeastern part of the State (Mississippi County).

2/ Many plants were found the leaves of which were spotted with small, angular, reddish spots. These lesions might easily be confused the early stage of the Cercospora spot. A careful study of these lesions and field observations disclose that much of what might be called Cercospora spot is really the initial stage of drough injury. From these small lesions develop larger brown, dead areas, on the leaf which frequently support species of Alternaria.

Cercospora leaf spot (C. gossypina) was causing severe defoliation in many regions, including plantings near Stuttgart (Arkansas County) and Brinkley (Monroe County) in eastern Arkansas, and Conway (Faulkner County) in central Arkansas. Leaf spot caused by Alternaria sp. was associated with the Cercospora at Stuttgart and Brinkley, moderate amounts occurring in both regions.

Lightning injury was very pronounced in one planting near Searcy, in which more than 100 plants were destroyed in a circular area.

Fusarium wilt (F. vasinfectum) was found in the following counties: Columbia, Union, Ashley, Chicot, Drew, Desha, Lincoln, Jefferson, Arkansas, Phillips, Monroe, Lee, St. Francis, Crittenden, Mississippi, Cross, Woodruff, and White. It is not suggested that the distribution of the disease in Arkansas is limited to these counties; merely that plantings in these counties were examined and found to be affected. Infection varied from 1 to 33% in various regions. The most severe infections observed were near Winchester in Desha County, and near Wabbaseka and Altheimer, both in Jefferson County.

Marked signs of soil deficiency troubles were observed in many fields, especially potassium deficiency, and also magnesium hunger.

In September, an extensive survey of nearly 500 acres of cotton was made in Sevier, Little River, and Miller Counties in the southwestern Corner of Arkansas for Phymatotrichum omnivorum root disease, which had previously been reported from a limited area in Little River County. Several examples of root rot were observed on "black land" west and south of Foreman, Little River County. The distribution during the current year, as observed, included scattered occurrences from Foreman southwest into southeastern Oklahoma. The degree of damage sustained in various fields fluctuated from 2 to over 10% depending upon the location. The most severe infection observed was in the lowland southwest of Foreman.

Verticillium wilt (V. alboatrum) was observed in a single planting in the same region, southwest of Foreman. The acreage of this plantation was so large, and the infection so restricted, that less than 1% loss could be attributed to this disease.

Fusarium-wilted plants were observed in plantings south of DeQueen (Sevier County), Ashdown (Little River County), and Ogden (Little River). In the planting south of DeQueen the loss was 1%; whereas the loss due to Fusarium wilt in the other regions was more than 2%.

Angular leaf spot, Cercospora, and Alternaria infections were observed in most of the plantings surveyed. In no case was it possible to estimate intelligently the loss due to these 3 diseases. Very little defoliation was observed in fields with moderate to severe amounts. (Howard W. Larsh, Emergency Plant Disease Prevention Project)

DISEASES OF HOPS IN NEW YORK

R. C. Magie

Attacks by downy mildew (Pseudoperonospora humuli) during May were serious, especially so in yards where labor difficulties and wet weather delayed the training of vines up their supports until June. This early infection stunted the growth on about 150 acres and yields were reduced to about 10% of normal.

Copper sprays and dusts were used with good results during June and July on 85% of the acreage. A small amount of cone infection occurred with August rains in a few small yards which were not thoroughly sprayed. In general, the crop is remarkably free of downy mildew infection.

The only epidemic outbreaks of powdery mildew (Sphaerotheca humuli) occurred in Franklin County. Crop losses due to the mildew were not serious.

The first appearance of anthracnose (Colletotrichum humuli) on hop cones occurred in Middleburg, Schoharie County, in August, 1942. It reappeared in the same yard in August, 1943. Very little loss occurred here in either year. About 25% of the crop was lost due to rotting of the cones by this fungus in one acre at Deansboro, Oneida County, during August of this year. This yard was poorly sprayed with Bordeaux mixture and sulfur.

The control of sooty mold (Fumago vagans) depends on the control of the hop aphid (Phorodon humuli). Practically all yards were sprayed or dusted once with nicotine sulfate this year. Many were sprayed 2 or 3 times. At least 12 yards of about 65 acres lost a portion of the crop due to sooty mold. The total loss this year will not exceed the equivalent of about 6 acres or 1% of the State crop.

About 16 acres in Oneida County have 10 to 30% of the plants affected by virus-like diseases. Affected plants may produce a normal corp some years. The disease affects the plants severely and reduces yields markedly when high temperatures occur in June, as in this year, before the plants attain their full growth. The spread of these troubles is very limited unless affected plants are used as a source of propagating material. The first occurrence of affected plants in Franklin County was found this year.

Sterile plants were found in Schoharie County in 1942. These plants were sterile again this year. Only a few dozen plants in three yards were affected.

NEW YORK (GENEVA) AGRICULTURAL EXPERIMENT STATION. September 10.

DISEASES OF OTHER TECHNICAL AND DRUG CROPS

GRAY MOLD OF CASTOR BEAN IN FLORIDA: -- Gray mold (Botrytis cinerea) occurred abundantly on castor beans (Ricinus communis) in a plot planting at Gainesville, attacking the fruiting spikes in various stages of development. This disease has been of frequent occurrence in parts of Florida for a considerable number of years. It spreads rapidly during the warm, humid, rainy summers and constitutes a serious drawback to seed production of this crop. (Arthur S. Rhoads, Emergency Plant Disease Prevention Project, report July 25 to August 31)

ALTERNARIA LEAF SPOT OF CASTOR BEAN IN TEXAS: -- The castor bean planting on the Lower Rio Grande Valley substation, at Weslaco, showed all leaves heavily infected with a leaf-spotting fungus, which according to Dr. G. H. Godfrey is a species of Alternaria. On specimens of this that I collected and pressed I was later unable to discover any conidia at all. (G. M. Watkins, Emergency Plant Disease Prevention Project, week ending October 2)

ROOTKNOT AND LEAF SPOT ON ROSELLE IN FLORIDA: A test planting of this crop (Hibiscus sabdariffa) on nematode-infested land at the North Florida Experiment Station at Quincy showed that it was highly susceptible to rootknot (Heterodera marioni), the few plants that were pulled up being extremely severely attacked. A leaf spot was also of widespread occurrence in the planting but no fungus was fruiting in the material collected. (Arthur S. Rhoads, Emergency Plant Disease Prevention Project, report for September)

SOUTHERN BLIGHT ON ROSELLE IN TEXAS: -- A plot of roselle on the Weslaco station showed 10% of the plants dead of Sclerotium rolfsii. It seems that the susceptibility of this plant to southern blight should by all means be considered in any recommendations that might later be made for its use as a war fiber crop. (G. M. Watkins, Emergency Plant Disease Prevention Project, week ending October 2)

DISEASES OF PEPPERMINT AND SPEARMINT IN INDIANA: -- In northwestern Indiana, visited August 24 to 27, nearly all of the fields of meadow peppermint (Mentha piperita) had been cut and distilled. A number of growers reported that the peppermint did not survive the winter and the cold wet spring very well and very poor stands resulted. Row or first-year peppermint in most cases was infected slightly with anthracnose (Sphaceloma menthae).

In northeastern Indiana, September 27 to October 2, 12 of the 13 fields of peppermint examined near Columbia City and Nappanee were affected moderately to severely with anthracnose. Two fields of the Scotch variety of spearmint (M. spicata) were affected severely with rust (Puccinia menthae) and moderately with anthracnose. (R. C. Baines, Emergency Plant Disease Prevention Project).

REPORTS ON TOBACCO DISEASES

MARYLAND: -- During the week of August 9 to 14 I visited farms in Southern Maryland.

Tobacco was making very poor growth in Charles and St. Mary's Counties, with slight improvement around Oxen Hill section in western Prince George County where some rain has aided crops. Severe droughts in these counties were responsible for a short crop of tobacco, the lower leaves drying up before the crop had flowered. Tobacco was being cut green in order to save the crop, and was curing out a good quality leaf in this dry season. It was estimated that the crop will be reduced about 35% due to drought.

Tobacco diseases were hard to detect this season in the field, although earlier (July 5) mosaic (virus) was very severe in most fields and was believed at that time to be the worst outbreak of any season. With the drought mosaic symptoms became obscured. Cercospora leaf spot (C. nicotianae) was present although not abundant since the crop was being cut before the disease became severe. Anthracnose (Colletotrichum sp.) on leaves and stalks in the field had not been noticed. Fusarium wilt - (F. oxysporum var. nicotianae) resistant tobacco No. 21 showed no wilt this year and had replaced the susceptible type that had showed 60 to 80%

plants with wilt in previous seasons.

Granville wilt (Pseudomonas solanacearum) was observed in 2 tobacco fields widely separated from each other. On a farm near Bel Alton, Charles County, about one acre of Burley tobacco was badly diseased. Actual counts of 4 rows selected at random showed 47, 50, 37, and 48%, or an average of 45.5% of plants wilting from Granville wilt. On July 23 this same field showed only 21% wilt.

On a farm near Croome Station in Prince Georges County Granville wilt had affected over 25% of the Maryland Medium Broadleaf tobacco. Some areas of this 1-acre field were 100% infected and most plants were already dead. (E. A. Walker, Emergency Plant Disease Prevention Project)

NORTH AND SOUTH CAROLINA: -- With T. W. Graham of the U. S. Department of Agriculture, stationed at Florence, a survey of the effect of nematodes on tobacco in the South Carolina bright leaf area was undertaken, (Florence, Darlington, Lee, Williamsburg, Georgetown, Horry, Marion and Dillon counties in South Carolina; Columbus and Robeson counties in North Carolina, August 15 to 22).

An effort was made to stop at fields in which the tobacco was poor and most of these fields (90%) were heavily infested with the meadow nematode (Pratylenchus pratensis). Almost every stunted plant in the field had brown lesions and clipped roots characteristic of the trouble. Estimated damage varied from 10 to 50%. Meadow nematode was very common but it was usually accompanied by rootknot nematode (Heterodera marioni). We felt that 15% damage by both organisms in the areas was a conservative estimate.

Only one field heavily infected with mosaic was found. In this field all plants had been damaged by hail and cut back. The tops therefore were developed from lateral buds or "suckers". In this field 60% of the plants had mosaic. In other fields an occasional sucker would have mosaic symptoms.

Because it was so late in the season it was difficult to recognize other diseases, but several fields appeared to be infected with hollow stalk Erwinia arodiae). Plants were taken for culturing. (R. E. Atkinson, Emergency Plant Disease Prevention Project)

REPORTS ON POTATO DISEASES

POTATO DISEASES IN MASSACHUSETTS: -- Summary of surveys made by Robert C. Cassell and O. C. Boyd accompanied by the county agricultural agents of Hampden and Hampshire Counties (October 7, 8) and of Middlesex County (October 14, 15).

Black leg (Erwinia atroseptica) [E. phytophthora]. A trace of tuber rot was found during harvest in one field each in Chesterfield and Worthington, Hampshire County, whereas a majority of the fields examined in that county and all the fields in Hampden County showed none.

Late blight (Phytophthora infestans). Light to moderate leaf infections but no tuber decay were found in well sprayed fields in the western hill towns of Hampshire County; no infections were found in Hampden County.

Pink rot (Phytophthora erythroseptica). On a large farm in western Hampshire County, only a trace of tuber decay was observed in fields where moderate to severe losses occurred in recent years. It looks as though the carryover of the fungus was greatly reduced last winter.

Scab (Actinomyces scabies). Only traces to light infections were observed in any of the fields in the Connecticut Valley of Hampden County or the western hill towns of Hampshire and Franklin Counties. The disease has caused light to moderate damage in a good many fields in the valley area of Hampshire and Franklin Counties where the land in past years has been limed for onion or tobacco culture. Chippewa appears to be particularly susceptible especially to deep scab.

Spindle tuber (Virus). Practically every tuber in a 7-acre field of Green Mountains in Southwick, Hampden County, planted from home-grown seed, showed typical symptoms of spindle tuber. The yield was running about 150 bushels per acre less than an adjoining field planted from certified seed.

Rhizoctonia solani. General but slight occurrences of "Rhizoc" sclerotia were observed on harvested tubers in 3 fields in Chesterfield, Worthington and Agawam.

Ring rot (Corynebacterium sepedonicum). A trace of tuber decay was observed in a large crop in Worthington where certified seed had been used. A 150-acre planting in Hawley, Franklin County, mostly of Katahdins, showed a general but very light infection over all the fields already dug -- except one in which at least 1 to 2% of infected tubers were left in the field. The Katahdin fields, according to the grower, were planted from No. 2 tubers from Maine that were supposed to be from certified fields. The grower reported also that the same fields showed from 25 to 80% of leaf roll.

Early blight (Alternaria solani). A light infection was observed in a field of Russets in Chesterfield, Hampshire County.

Potato Yields: -- Yields are running from about 60 to 70% of normal in Hampden County and in the Connecticut Valley area of Hampshire and Franklin Counties, to 75 to 90% in the western hill towns of Franklin and Hampshire Counties. Unusual aphis infestations and Rhizoctonia infections, together with a cold, wet spring and a warm dry summer, are the principal reasons for the marked reduction in yield this year. (O. C. Boyd, Massachusetts State College)

BACTERIAL RING ROT OF POTATO IN NEW YORK: -- From September 30 to October 8, a disease survey was undertaken in Cattaraugus, Chautauqua and Wyoming Counties, New York, with emphasis placed upon the prevalence of bacterial ring rot (Corynebacterium sepedonicum) of potatoes in relation to "Selected" seed obtained outside the State.

Professor Charles Chupp and Mr. L. C. Knorr of Cornell University, and the farm bureau agents of the above counties rendered assistance in the work.

Approximately 1000 bags of "Selected" seed obtained outside New York State were distributed among 200 growers in Cattaraugus County. Five of these growers were visited and a search was made for bacterial ring rot of potato. The disease was found in the 5-acre field of one of the growers located near Great Valley. Laboratory examination of one small rotting tuber found in about 1500 feet of row in this field revealed the

presence of the ring rot pathogen. This field was being dug at the time of examination. Failure to find the disease in the remaining 4 fields probably was due to the fact that digging operations were not under way and so the success of the search for ring rot was made uncertain by the necessity of digging hills at random and examining the tubers.

In Chautauqua County, 6 farmers who had planted "Selected" out-of-state seed were visited. Diseased tuber specimens taken from 2 of the farms, one near Ashville and one near Mayville, yielded the ring rot bacterium. The prevalence of ring rot diseased tubers in the 2 fields ranged from a trace to 2 or 3%. The presence of the disease on the 4 remaining farms was not established.

Bacterial ring rot was present to the extent of 3% in mixed white and Russet Rural potatoes in a commercial field near Mayville. The source of the seed was the farm of a grower near Coudersport, Pennsylvania, and ring rot is known to be present in and destructive to potatoes grown on this farm.

The farm bureau agent and some half dozen leading potato growers in Wyoming County did not know of any "Selected" out-of-state seed that had been brought into this County. Two commercial potato farms near Hermitage, in Wyoming County, were visited. Russet Rurals were being harvested at the time and careful examination of about 2500 feet of row did not reveal ring rot. Ring rot was known to be present in Bliss Triumph potatoes previously grown by one of the above growers but he had changed to Russet Rurals and, together with a general clean-up, apparently rid his place of the disease.

A field of Katahdin potatoes near Batavia was visited and 15% ring rot diseased hills was estimated through vine symptoms. This represents a considerable increase of the disease on this farm because in 1941 Mr. L. C. Knorr examined 500 tubers from another crop on this farm and found 2% ring rot.

Widespread distribution of bacterial ring rot of potato in New York State is shown by the establishment of its existence in 24 of 62 counties. (Leon J. Tyler, Emergency Plant Disease Prevention Project)

BACTERIAL RING ROT AND OTHER TUBER DISEASES IN PENNSYLVANIA: -- Drs. O. D. Burke and W. R. Mills of Pennsylvania State College; and county agricultural agents, Mr. Burt Straw and Mr. Clifford Tritt of Potter and Warren Counties respectively, were collaborators.

The disease survey was restricted, mainly, to observations concerning potato tuber diseases in Potter and Warren Counties.

Potter County - (September 28-29). -- Two of the principal potato growing areas in Potter County were visited. In the Crandall Hill area, 8 different fields were examined. Bacterial ring rot (Corynebacterium sepedonicum) was found in tubers from 4 of the 8 fields as the potatoes were being dug. In 1 field, variety Allegany Mountain exhibited a trace of ring rot; variety Pennigan exhibited a trace to 1% respectively in 2 fields. In another field, White Rural potatoes exhibited 2 to 3% ring rot. Russet Rural, Chippewa, and Katahdin potatoes in 4 other fields were ring rot free.

In the Sweden Hill area, several fields and potato storage houses were visited. One field planted with White Rural (strain Heavyweight) showed about 2% bacterial ring rot diseased tubers. The grower of the above

mentioned potatoes revealed that ring rot had destroyed almost 50% of the tubers in another of his fields which was planted with the variety Katahdin. Two percent of the tubers in another field of Russet Rural potatoes exhibited ring rot. Based on vine symptoms, a field of Nittany Cobbler potatoes exhibited 10% ring rot, while Russet Rural potatoes belonging to the same grower also exhibited the disease. Fields of Bliss Triumph, Nittany Cobbler, Russet Rural, and Allegany Mountain potatoes belonging to another grower all exhibited ring rot diseased tubers. In a Sweden Hill potato storage house a random selection of 100 tubers from one bin (Russet Rural) yielded 8% ring rot diseased tubers.

Fields of Chippewa, Sequoia, White Rural, Russet Rural, Houma, and Katahdin potatoes grown in the vicinity of Ulysses, Coudersport, and elsewhere in Potter County apparently were ring rot free. Storage houses near some of the above fields also failed to yield ring rot diseased tubers.

Late blight (Phytophthora infestans) was observed to be quite destructive in only one of the above mentioned fields; this particular field was planted with the variety Katahdin and at least 3% of the tubers (as they were being dug) exhibited late blight lesions.

Black leg, scab, and Rhizoctonia were prevalent in many of the fields but in most cases to the extent of not more than a trace. Scab was noticeably more prevalent on Katahdin and Bliss Triumph than on other varieties.

Tubers bearing symptoms of Fusarium wilt (Fusarium oxysporum) and of the Z-disease (F. solani var. eumartii) were noticed in about one-half the fields visited. Usually their prevalence was limited to a trace.

Warren County - (October 5-6). Potato fields near Columbus, Garland, Youngsville and Akeley in the northwestern, west central, central, and northeastern Warren County, respectively, were visited. Bacterial ring rot was seen only in the Columbus area. Six different fields in the Columbus area were visited and with one exception these were planted with Russet Rural potatoes. Ring rot varied from a trace to 2 or 3% in 3 of 5 Russet Rural fields. One field of Katahdin potatoes showed approximately 2% of diseased tubers. Four of the fields belonged to 2 growers who produced extensively and they were aware of the presence of the disease in their potatoes, while 2 fields belonged to neighboring small growers unaware of the presence of ring rot. Seed used by the latter growers was obtained from the former and so the disease was doubtless introduced into their fields in this way.

Bacterial ring rot was not found in fields of Russet Rural potatoes near Youngsville and Pittsfield. Examination of tubers in 5 fields, 4 of Russet Rural and one of Katahdin, near Garland failed to reveal the presence of ring rot. Likewise, ring rot could not be found in fields of Katahdin potatoes belonging to a commercial grower near Akeley. The latter grower had obtained certified seed from a Potter County grower about 3 years previously and since maintained his own seed stock.

Bacterial ring rot of potatoes has also been reported from 2 farms just north of Warren, but these were not visited.

Generally, late blight, scab, and Rhizoctonia were present to the extent of bare traces in fields of commercial growers.

Tubers exhibiting symptoms of Fusarium wilt, and of the Z-disease were noticed in about 1/3 of the fields visited but counts indicated a maximum of not more than 1%.

Tubers showing yellow dwarf (virus) symptoms (cracks parallel with the long axis together with small, discolored flesh spots) were noticed in several fields of Rural potatoes near Columbus and Garland. Usually, not more than a trace was evident. (Leon J. Tyler, Emergency Plant Disease Prevention Project)

LATE BLIGHT ROT AND OTHER TUBER DISEASES IN WEST VIRGINIA: -- A 2-day trip was made through the potato-growing area in Preston, Barbour, and Randolph Counties in West Virginia.

Heavy rains in July and August were factors contributing to an epiphytotic of late blight that destroyed the foliage in all unsprayed or poorly sprayed fields. In fields thoroughly sprayed or dusted most of the foliage survived and yields of between 350 and 400 bushels per acre are common. Yields in unsprayed fields range from 150 to 250 bushels per acre where cultural practices other than the use of fungicides was adequate. As might be expected, many of the unsprayed fields received little attention to other cultural factors and yields are very low. Extremely dry weather prevailed in September and so far in October, and late blight rot is slight. Tuber infection was less than 1% in any field seen on this trip although reports have been received of much higher loss in some fields. The crop is well-matured and is being harvested from dry soil so should be in excellent shape for storage.

Soft rots are present and affecting from 1 to 5% of the tubers in many fields. Several growers in this section expressed dissatisfaction with past behavior of the Sequoia variety because of soft rot in wet seasons and this variety is not popular with commercial growers in this mountainous region. The soft rots seen probably are of bacterial origin although some tubers resembled injury identified some years ago in New York as being caused by Pythium ultimum. Rot in many cases appears to have originated in bruises, probably sprayer wheel injuries. In other cases soft rots follow late blight infections.

Bacterial ring rot had caused visible symptoms on about 1% of the tubers in one of the 8 lots examined. This field was grown from #2 size seed home-grown from tubers certified in 1942 (Smooth Rural).

Spindle tuber (virus) symptoms were evident on approximately 10% of the tubers in the lot of Smooth Rurals affected by ring rot. A few tubers resembling spindle tuber were seen in another field grown from seed certified in 1942.

Scab ranged from a trace to 20% in most fields, being much higher in the field reported previously (PDR 27:426, Oct. 1). A contributing factor in this region appears to have been a period of dry weather at the period of tuber set in June. In one case of severe scab development, the pH value of a soil sample was 5.4.

Silver scurf (Spondylocladium atrovirens) was present on a few tubers in each of several lots.

The present table stock market is very good and most of the crop is being sold without storage. (C. F. Taylor, Emergency Plant Disease Prevention Project, October 4 to 9)

LATE BLIGHT AND SCAB IN NORTHEASTERN INDIANA: The potato tops in most of the fields on muck soil had died and some of the fields that matured early were being harvested. In general, between 50 and 60% of the tubers

are free or affected slightly with scab; 30 to 40% affected moderately, and 5 to 10% severely.

The partially green tops on 4 fields were severely infected with Phytophthora infestans. In one field it appeared that about 5% of the tubers were infected. (R. C. Baines, Emergency Plant Disease Prevention Project. September 27 to October 2)

TUBER DISEASES IN MINNESOTA AND THE DAKOTAS: -- Red River Valley -- During the week ending October 3, a survey of potato diseases was made in the Red River Valley of Minnesota and North Dakota (Clay, Norman, and Polk Counties in Minnesota; Traill, Steele, Grand Forks, Walsh, Pembina, Cavalier Counties in North Dakota), and Benson and Towner Counties in northern North Dakota, west of the Valley.

Tuber rots -- In Minnesota, near Moorhead, late blight tuber rot was not serious, a trace of blighted tubers being found in warehouses at Moorhead, Glyndon, Baker, and Sabin. Occasional fields had up to 1% blighted tubers. Potatoes at Halstad and Ada also were not appreciably infected by blight. In the East Grand Forks area, little blight was seen, only occasional rotted tubers being found. Late fields examined at Barnesville in Clay County during the following week had 1 to 5% blighted tubers, and at Hawley, Ohios, at grading, were infected on the average about 1%, some lots running as high as 5%.

In North Dakota, a trace of late blight rot was seen in fields, in storage cellars, and in warehouses in Traill, Steele, Grand Forks, and Walsh Counties. In one field of Cobblers, near Thomson in Grand Forks County, 5% of the tubers were rotted from late blight, black leg, and ring rot. In Pembina County, one small field of Ohios, just west of Neche, had 60% severe tuber rot in the field, another 20% of the tubers with rot beginning, and about 20% apparently healthy. Triumphs planted adjacent to the Ohios in the same field did not show more than a trace of late blight rot. Apart from the one field of Ohios, no other blighted fields were found in Pembina County. No blight was seen in the Edinburg and Park River sections of Walsh County, at Tokio in Benson County, nor in Towner County near Cando.

Scab and Rhizoctonia -- A few fields where scab was moderately severe were found in Clay, Norman, and Polk Counties in Minnesota. Rhizoctonia was light in this area.

In North Dakota, little scab or Rhizoctonia was seen in Traill, Steele, Grand Forks, Walsh, Pembina, and Cavalier Counties, except around Edinburg in Walsh County where light to moderate infection of both diseases was common. At Park River in Walsh County, scab was light and Rhizoctonia trace to light. In Benson County, at Tokio, scab was light to moderate, and Rhizoctonia light; while at Cando, in Towner County, little scab and Rhizoctonia were seen.

Northcentral and Central North Dakota -- During the week ending October 10, a survey of potato diseases was made in Bottineau, Renville, Ward, McLean, and Burleigh Counties.

Tuber Rots -- Late blight rot was found in 2 sections only: at Burlington west of Minot (Ward County), and at Bismarck. At Burlington, of Green Mountain tubers in storage about 2% were rotted. Of this 2% in storage all were infected by Phytophthora infestans, while at least 1% of

the blight-infected tubers also had a dry rot, at or adjacent to the stem end. The rotted area was sharply delimited from healthy tissue, a definite dark brown to black zone having developed at the junction of diseased and healthy tissue. Many of the Green Mountain tubers had been left in the field and an estimate of the loss due to late blight and stem-end rot would be not less than 5%. Triumphs and Russets from fields near the affected Green Mountains had no late blight or other rots. At Bismarck several fields of Ohios on the flats near the Missouri River had up to 10% late blight tuber rot, many of the tubers also having stem-end rot. Red Warbas were less heavily attacked by blight, a maximum of 5% tuber rot being found in one field. It was reported by the growers that Triumphs and Ohios, that had already been dug, were most heavily infected, Warbas being relatively free from tuber rot.

No late blight was found in fields at Deslacs, Lonetree, or Berthold just west of Burlington, but on high ground outside of the Deslacs Valley.

Scab and Rhizoctonia -- Rhizoctonia was very light in all the counties surveyed this week, but scab was severe in some areas. At Burlington, where potatoes have been grown rather intensively for some years, scab, including pit scab, was very heavy on Triumphs and Green Mountains, and several fields of Ohios southeast of Washburn (McLean County) also were heavily scabbed. The potatoes near Washburn were grown on wheat stubble and the growers stated that the land had not been used for potatoes previously. These potatoes were being grown for table stock and the seed was not certified. Other fields within a 10-mile radius of Washburn and where certified seed was being produced had virtually no scab. It is very possible that use of good seed and treatment of the seed pieces by the certified seed growers were the main reasons for the relative freedom from scab of the certified fields.

State of the Potato Crop Going into Storage -- Many of the potatoes in Minnesota, North Dakota, and South Dakota are going into storage somewhat bruised and not infrequently badly skinned. The shortage of experienced labor in some areas and the need to get a big crop into storage before frost have made the proper handling of the crop difficult and it is quite possible that storage rots may be more common than in recent years. The soil at digging has been very dry and hard on the tubers. (Ian W. Tervet, Emergency Plant Disease Prevention Project)

CONDITION OF POTATO SHIPMENTS ARRIVING AT DES MONIES, IOWA: -- On October 8, the public market, commission houses, and railroad yards in Des Moines were visited with Dr. I. E. Melhus of the Iowa Agricultural Experiment Station to determine the condition of potato shipments arriving there. On the basis of the potatoes examined and the observations of the commission merchants and railroad perishable products inspectors, the shipments from the Upper Mississippi Valley are arriving in good condition at the Des Moines terminal. The shipments examined were noticeably free from decay, only an occasional tuber affected with soft rot being detected. In some lots slight wireworm damage and scab infection were noted. Rhizoctonia sclerotia were generally present on the tubers in some shipments, but not pronounced enough to decrease the quality of the potatoes materially. (T. W. Bretz, Emergency Plant Disease Prevention Project)

LATE BLIGHT AND OTHER DISEASES IN WELD COUNTY, COLORADO: (September 2 to October 2) -- In many potato fields in Weld County the late blight fungus is still active on the foliage and stems of the plants. Since the last survey (PDR, Sept. 15, p. 387) many of the fields that showed only a slight amount of infection are now moderately to heavily attacked. However, in other fields no further spread appeared to take place. In all of the fields that showed a heavy infection during the first week of September, from 80 to 90% of the vines are completely dead, and although tuber infection ranges from a trace to 2%, the yield is greatly reduced. In fields where the vines are still green and active lesions are present and where late irrigation was applied, a high percentage of the tubers are infected. In several such fields tuber infection ranged as high as 50%, while in others from a trace to 5% was recorded. Harvesting is still in progress and it appears at this time that tuber infection in Weld County will not exceed 2%.

From a trace to 1% of the tubers were affected by common scab in practically all of the late potato fields.

A trace of early blight (Alternaria solani) tuber infection was observed in a few of the fields inspected.

Fusarium wilts (Fusarium solani var. eumartii and F. oxysporum) are general throughout Weld County. In one field it was estimated that 30% of the plants were infected; however, only a slight amount of stem-end discoloration was evident in the tubers. For the entire county possibly a total of 2 to 3% of the plants are affected by these diseases.

For bacterial ring rot see the October 1 issue, page 418. (E. W. Bodine, Emergency Plant Disease Prevention Project)

RING ROT AND OTHER DISEASES IN ARIZONA: -- Bacterial ring rot was severe in one 45- and one 40-acre field at Williams in Coconino County; in another 35-acre field a very slight amount was observed. Other diseases noted here were Fusarium oxysporum wilt, moderate in 2 fields; Rhizoctonia, slight in one field and very slight in another; scab, and psyllid yellows (induced by the potato psyllid, Paratrioza cockerelli), each very slight in one field.

At Flagstaff in the same county a very slight amount of ring rot was found in only one of the fields observed. Other diseases found in this location were early blight in 3 fields, psyllid yellows in 2, and Fusarium wilt in 1; all in slight amounts.

A moderate amount of ring rot occurred in a small field at Linden and another at Taylor in Navajo County; psyllid yellows was observed in the Taylor field. Slight amounts of early blight and psyllid yellows were noted in small plot at Springerville, Apache County. (Wm. G. Hoyman, Emergency Plant Disease Prevention Project, week ending September 25)

LATE BLIGHT IN OREGON: -- Late blight was very severe on potatoes and tomatoes in the Woodsen Drainage District of Columbia County, (October 1), where farmers did not have proper facilities for control. Tomatoes had made good development but over half of the crop in this area was lost. In many cases potato tubers were rotted when dug. Selected "clean" tubers from such fields are showing rapid development of storage rot. Large plantings of either of these crops were not noted in this area but the loss

to either is of considerable importance to consumers at home and in the local markets.

Late blight was very severe in garden plantings of potatoes and tomatoes in Clatsop County, (October 2), and was severe on potatoes in garden plots in Tillamook County, (October 4).

Blight was severe on potatoes in Lincoln County also (October 5). In some instances effective control had been accomplished. (Lytton W. Boyle, Emergency Plant Disease Prevention Project)

SURVEYS FOR DISEASES OF CABBAGE AND CAULIFLOWER

DISEASES IN NEW YORK: -- Nine different fields of cabbage grown in the vicinity of Cortland were visited. Black leg (Phoma lingam) was found in 4 of these fields distributed over 3 different farms. The disease was moderately severe to severe on 2 farms with but a trace on the third. Plants in the fields where black leg was severe were grown from seed that obviously had not been hotwater treated, as shown by the extremely high prevalence of black leg in plants remaining in the seedling plot. Since this seedling plot was located high on a hillside far above any possible source of inoculum there can be little question that the seed used had not been treated or perhaps improperly treated. Approximately 60 acres were set with plants from the seedling source. Conservative estimates of the loss sustained by growers, using these plants, ranged from 30 to 40% of the crop.

Downy mildew (Peronospora parasitica) was observed on 2 of the 5 farms. Severity and prevalence of the disease ranged from a trace on 25% to slight on all plants.

Black rot (Xanthomonas campestris) was observed on 2 farms but its prevalence was very slight.

Club root (Plasmodiophora brassicae) was present in all fields visited. Usually not more than 1 to 2% of the plants were diseased but in one field approximately 50% of the plants had club root. (Leon J. Tyler, Emergency Plant Disease Prevention Project, September 30 to October 8)

WISCONSIN: -- Inspection of cabbage and cauliflower fields was made in Kenosha, Racine, Outagamie, Shawano and Oconto Counties during the week ending October 9.

Black rot on cabbage and cauliflower was present on not more than a trace in fields examined in Kenosha and Racine Counties with one exception where about 95% of the plants were infected of which 3% was severe. There will probably be a reduction of 10 to 15% of the yield in this field. The transplants for this field were secured from a southern source out of the State. Black rot frequently followed by soft rot (Erwinia carotovora) was quite severe on cabbage and cauliflower in Outagamie, Shawano, and Oconto Counties. Infection in examined fields ran up to 100% with from 2 to 95% severe. Most growers had "shopped around" and secured seed from several sources and frequently had supplemented this by buying transplants. In some cases the first plantings had been lost and transplants from whatever possible source were used for replanting. It was concluded that the distribution of plants from seed beds on soil contaminated either from in-

fected seed or from previous crops of cabbage or cauliflower were chiefly responsible for the widespread occurrence of black rot in these areas.

In the Kenosha and Racine area black-leg commonly affected from 1 to 2% of the cabbage plants. In one field it occurred in about 10 to 12% of the plants of the Bugner variety grown from untreated Wisconsin-produced seed. Black leg was absent, or at most slight on cabbage and cauliflower in Outagamie, Shawano, and Oconto Counties.

Club root of cabbage and cauliflower was found present on from a trace up to 95% of the plants. It occurred generally distributed throughout the fields or, in other cases, in spots. Some fields appeared to have become contaminated from flood waters in low spots. In some fields where infection appeared to affect 80 to 90% of the plants only about a 20% reduction in yield occurred. In fields where corrosive sublimate was introduced into the planting water, clubs were formed chiefly on the root extremities leaving the main tap root healthy and permitting head formation.

Cabbage yellows (Fusarium conglutinans) occurred in some fields to the extent of a trace up to about 18% in Kenosha, Racine, and Outagamie Counties. In one field about 8% were severely affected. Downy mildew and to a lesser extent Alternaria leaf spot [species not designated] were present in many cabbage fields but did not appear to be causing significant damage. Heat injury at time of planting caused considerable damage in some cases. A trace of mosaic (virus) on cabbage was found in several fields. One field of cabbage on a sandy soil in Oconto County appeared to be firing and dropping its leaves from potash deficiency. (E. E. Honey, Emergency Plant Disease Prevention Project)

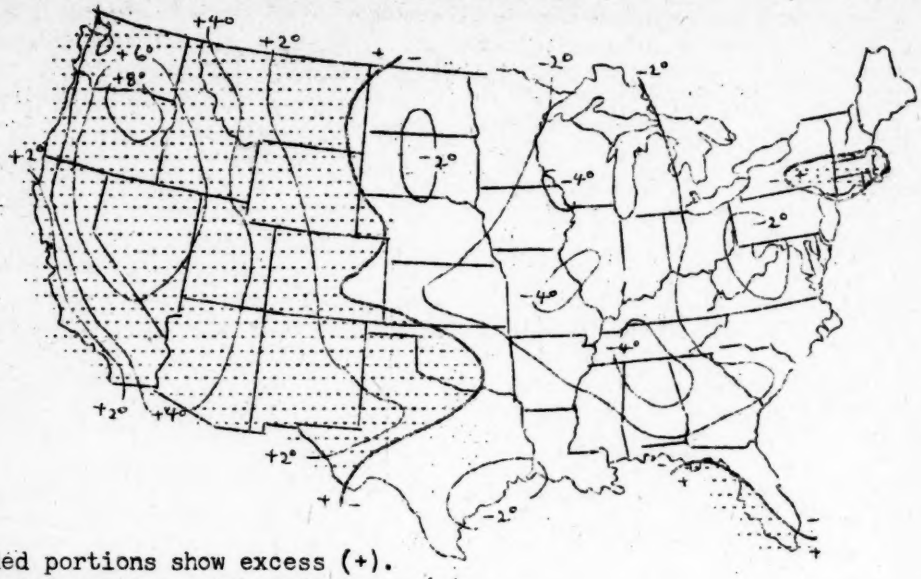
SEPTEMBER WEATHER

(From the U. S. Department of Commerce Weather Bureau. Weekly Weather and Crop Bulletin for the week ending October 5, 1943).

In several respects, both temperature and precipitation for September 1943 ran in opposition to conditions for the preceding month. August was abnormally warm from the Rocky Mountains eastward, while in this area the mean temperature for September was somewhat below normal rather generally. Also, in much of the far West August was relatively cool, while September had much-above-normal temperatures, especially in the Great Basin. Likewise, as a general rule, September precipitation was scanty in the northern portions of the country and much above normal in central and west Gulf sections and the South-Central States, largely reversed from the geographic distribution for the preceding month.

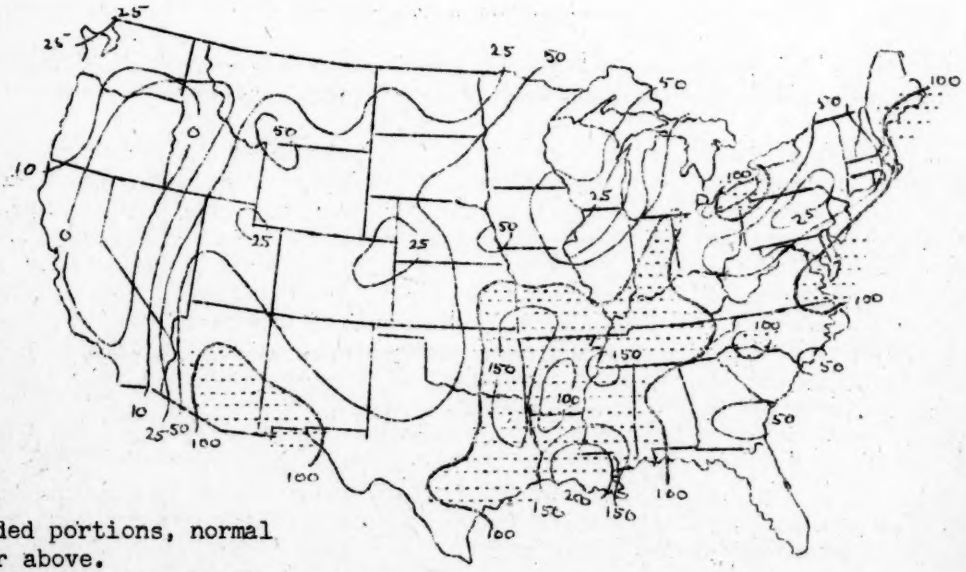
Map I shows that September mean temperatures in most of the Lake region and Interior Valleys were 2° to 4° below normal, while the plus anomalies were 4° to as many as 8° in much of the far West. There were no unusually low temperatures or widespread frost damage in Northern States, but, rather, the temperature persisted moderately below normal during much of the month.

Map II shows that precipitation was scanty in the Southeast, the middle and northern Appalachian Mountain sections, and quite generally from the Great Plains westward, except a limited area in the Southwest. Much of the more western area had no appreciable rainfall for the entire month.



Shaded portions show excess (+).
Unshaded portions show deficiency (-).
Lines show amount of excess or deficiency.

Map. I - Departure of Mean Temperature from the Normal September 1943



Shaded portions, normal or above.
Unshaded portions, below normal.
Lines show percentage of normal.

Map II - Percent of Normal Precipitation, September 1943.

NEW RECORDS AND UNUSUAL OCCURRENCES OF PLANT DISEASES

CERCOSPORA ZEAE-MAYDIS ON CORN IN EASTERN TENNESSEE AND KENTUCKY: During a trip from Knoxville, Tennessee to Hazard, Kentucky, September 8 to 11, a considerable amount of leaf spotting was observed in corn fields. The principal leaf spot, other than bacterial leaf blight, was an elongated narrow spot, on which abundant sporulation of a species of Cercospora was evident.

Dr. Charles Chupp of Cornell University, to whom specimens were sent for identification of the organism, writes in part (September 13):

"The most common Cercospora on the corn leaves you sent me September 11 are hyaline, wide, 5-9 x 30-80 microns, with a long obconically truncate and blunt tip, plainly multiseptate. There was also a slight amount of C. sorghi Ell. & Ev. (Journ. Mycol. 3: 15. 1887). This has much narrower conidia, acicular, truncate base, subacute tip, 2-5 x 300 microns.

"I do not know that C. zeae-maydis has been reported in any other states than Illinois, but it is common in South America.

"C. sorghi is common in all the southern States."

The relative importance of this Cercospora leaf spot and of bacterial leaf blight in fields in which they were found at this time is indicated in the following tabulation:

County	Amount of leaf spot		Remarks
	Cercospora leaf spot	Bacterial leaf spot	
Tennessee			
Union	20%	14%; 5% of leaf area affected	
Claiborne	Severe		
Claiborne	94%, mostly severe	16%	
Kentucky			
Bell	18%	82%	10-20% of leaf area affected
Bell	Present	50% of foliage dead	Hybrid U.S. 13, in milk to soft dough.
Bell	45%	28%	Tennessee Red Cob; 5% leaf area dead.
Harlan	Present	Present	5% leaf area dead.

County	Amount of leaf spot		Remarks
	Cercospora leaf spot:	Bacterial leaf blight:	
Kentucky continued:			
Harlan	20-25% leaf area dead, mostly this	Some	Johnson County White; land in corn continuously for 10 years.
Harlan	Some	75%, mostly this	20% leaf area dead
Letcher	In 2 fields, 10% and 4% of leaf area dead, mostly bacterial leaf blight and Cercospora leaf spot.		
Harlan	Present	Present	5-10% of leaf area killed.
Tennessee			
Hancock	10-15% leaf area killed, principally this.		

In eastern Tennessee, besides Claiborne, Union, and Hancock Counties already listed, Cercospora zeae-maydis was later found in Cocke, Greene, and Putnam Counties. (R. A. Hyre, Emergency Plant Disease Prevention Project)

FIRST REPORT OF SPOTTED WILT OF TOMATOES IN ARIZONA: -- During September of 1943, while making a survey of plant diseases in Yavapai County, Arizona, Mr. E. S. Turville, former County Agricultural Agent, requested me to look at two small tomato gardens at Prescott, Arizona. The tomatoes were transplanted during the spring of 1943 and, according to Mr. Turville, had not yielded any normal fruits the entire season. The symptoms on the old plants were typical of those described for the virus disease known as spotted wilt. A few growing tips were dead on affected plants and ripe fruits showed the characteristic markings caused by this virus. The ripe fruits were covered with numerous spots having somewhat circular areas consisting of alternate, concentric zones of red and yellow.

The altitude (5354 feet) at Prescott is favorable for the growth of dahlias and several plantings are known to exist each year at various locations throughout the city. During the summer of 1942, Mr. Turville and I examined a number of dahlias and found several plants to be infected with the mosaic and ring spot viruses. It is interesting to note that a dahlia planting containing some plants infected with the mosaic and ring spot viruses was adjacent to one of the tomato gardens mentioned above.

Although this is the first report of spotted wilt of tomatoes in Arizona, Mr. Turville is of the opinion that spotted wilt has been present in Yavapai County for several years. (William G. Hoyman, Emergency Plant Disease Prevention Project)

TOMATO FRUIT DROP, CAUSED BY EARLY BLIGHT! -- Early blight of tomato caused by Alternia solani has been of more than usual severity in northern Ohio during the summer of 1943. This disease frequently causes a stem-end canker on tomato fruits in Ohio but in 1943 there has been an unusually large amount of pedicel infection. This has resulted in a dropping of the infected fruits from the vines. In many instances the pedicels and parts of the stem which have been severely affected without the development of fruit cankers of appreciable size. The development of these lesions on the pedicels are apparently responsible for the early development of an abscission layer between the pedicel and the fruit. As a result the fruits are dropping from the vines by their own weight. As many as 30% of the fruits have fallen from certain vines. Many of these fruits did not reach more than 1/4 to 1/3 their normal size before they separated from the parent plant.

This type of fruit trouble has been observed this fall in numerous experimental spray plots as well as commercial fields. Some of the sprays used have given fairly good control of the trouble. For instance, in one experiment 35% of the fruits collected from check plots on October 4 were separated from the plant at the time of picking. On another plot treated with a fixed copper plus calcium arsenate the fruits separated from the plant made up only 7% of the total. (J. D. Wilson, Ohio Agricultural Experiment Station, October 7)

CHOANEPHORA ROT OF SQUASH IN MICHIGAN: -- Choanephora rot (C. cucurbitarum) was very prevalent on squash at the Botanical Garden of the University of Michigan, seriously interfering with studies involving crosses between varieties. Varieties, such as Buttercup, in which the corolla was retained for some time, showed most fruit rot. Removal of the corolla as soon as possible after fertilization reduced fruit rotting to some extent. The rot also occurred in a number of Victory Gardens in Ann Arbor. (E. B. Mains, University Herbarium, University of Michigan, October 7)

CHOANEPHORA CUCURBITARUM ON PUMPKIN ROOTS IN MARYLAND: In one field examined near Severn in Anne Arundel County 80% of the plants were dead. Dr. Leland Shanor reported that Choanephora cucurbitarum, along with a Fusarium, was isolated from diseased roots of specimens submitted to him. The squash borer was evidently causing death in some cases. (E. A. Walker, Emergency Plant Disease Prevention Project. September 13 to 18)

BACTERIAL CROWN CANKER OF COWPEA IN OKLAHOMA: -- During the week ending September 12, bacterial crown canker [reported from Texas by Dunlap in PDR 27 (14):274. Aug. 1, 1943] was observed in cowpea plantings at Perkins (in Payne County, northcentral part of the State), where it was causing a loss estimated at nearly 10%. Two or 3 plants exhibiting characteristic cankers were found in a planting at Supply (Woodward County, northwest).

During the following week, cowpeas were examined wherever found for the presence of bacterial canker. The disease was found 4 miles west of Tecumseh (Pottawatomie County, central), causing a loss of nearly 4%. In the North Canadian River Valley north of Wetumka (Hughes County), it was found on 4 plants in a mixed planting of cowpeas and peanuts.

A condition resembling bacterial canker, noted at several places, was found to be caused by the lesser cornt stalk borer. (Howard W. Larsh, Emergency Plant Disease Prevention Project)

FURTHER NOTE ON COWPEA BACTERIAL CANKER IN TEXAS: At the Winter Haven station during the week ending October 9, a small patch (about 1/10 acre) of California Blackeye cowpeas showed about 60% of the plants dead from the new bacterial crown canker of cowpea that Dr. A. A. Dunlap mentioned in a recent issue of the Plant Disease Reporter. Specimens from this plot were sent immediately to Dr. Dunlap, who confirmed the diagnosis. (G. M. Watkins, Emergency Plant Disease Prevention Project)

LEAF SPOT OF WITCH HAZEL IN FLORIDA: -- Leaf spot caused by Gonatobotryum maculicola (Wint.) Sacc. was found on plants at the Torreya State Park in September. This is the first record of the occurrence of this unique fungus in Florida. Heretofore, records of its occurrence were confined to a few northeastern States. As Overholts (Mycologia 18: 180. 1926) has noted, the spores evidently are shed early in the season and later the fungus is not in a satisfactory condition for identification, although the conspicuous, dark, bristle-like conidiophores persist. (Arthur S. Rhoads, Emergency Plant Disease Prevention Project)

BRIEF NOTES ON PLANT DISEASES

DODDER ON WOODY PLANTS IN FLORIDA: -- Dodder (Cuscuta compacta) was found to be growing profusely on a large variety of plants in a patch of sprout growth at the margin of a burned-over bayhead east of Monticello. The following plants were identified as hosts: oak (Quercus sp.), redbay persea (Persea borbonia), southern waxmyrtle (Myrica cerifera), sweet gum (Liquidambar styraciflua), titi (Cyrilla parvifolia), wooly white alder (Clethra tomentosa), red chokeberry (Aronia arbutifolia), fetterbush lyonia (Lyonia lucida), huckleberry (Gaylussacia tomentosa), and goldenrod (Solidago sp.). (Arthur S. Rhoads, Emergency Plant Disease Prevention Project, September)

PREVALENCE OF DODDER IN TENNESSEE: -- Dodder (Cuscuta sp.) is generally present, often to a considerable extent. I recorded it in 12 of the 23 counties in southern and western Tennessee included in this trip and it is probably present in many more. (R. A. Hyre, Emergency Plant Disease Prevention Project. August 23 to 28)

DODDER ON TOMATO IN CALIFORNIA: -- Among tomatoes planted in a young peach orchard near Biggs, 3 plants were found that were parasitized by dodder (Cuscuta campestris). (Horace L. Barnett, Emergency Plant Disease Prevention Project, September 19 to 25)

RUST OF STONE FRUITS IN CALIFORNIA: -- Prune rust (Tranzschelia prunispinosae) was common in the area around San Jose and Morgan Hill in the Santa Clara Valley, and was causing some defoliation. Peach and almond were relatively free from rust. (Horace L. Barnett, Emergency Plant Disease Prevention Project. Week ending October 9)

LIGHTNING INJURY TO PINE AND OAK TREES IN FLORIDA: -- Two instances of an unusual dying of pine reproduction in local areas, apparently due to

lightning injury, were noted at the eastern border of Dixie County. In the first case noted all the young pines in a circular area of more than 100 feet in diameter in an open, glade-like region along the roadside had been killed so recently that the needles were mostly still adhering. The trees consisted chiefly of long-leaf pine (Pinus palustris) from 1 to 2 inches in diameter and ranging up to 15 feet in height, with a few shortleaf pines (Pinus echinata) at one side, 2 of these being as large as 4 inches in diameter. A few miles distant, while examining the prevalence and severity of the fusiform rust in an area of young shortleaf pine, another instance of the death of trees in a similar but less definitely circular area was noted. In this case the trees were mostly from 3 to 4 inches in diameter and the injury had occurred sufficiently long ago that the trees, with the exception of a single recently dead tree at one side, were defoliated. No evidence of fire or other cause of this sudden and peculiar dying of all the trees in these localized areas could be seen.

Unquestionable instances of lightning injury to large individual trees were noted in the case of a southern red oak (Quercus rubra) near Fort White and on shortleaf pine (Pinus echinata) at Monticello, both exhibiting the characteristic furrows down the trunks. (Arthur S. Rhoads, Emergency Plant Disease Prevention Project. July 25 to August 31)